
Network Video Recorder

User's Manual

NVST IL4204E

NVST IL4208E

NVST IL4216E

Thank you for using our product.

1. This is user's manual for NVR(Network Video Recorder).
2. This manual contains product specification and introduction, installation guide, operating guide and other necessary matters for easy understanding. Users should read this user's manual carefully for proper use.
3. Contents in this manual may be changed according to the specification change and feature improvement without any notification.
4. This user's manual shall never be copied without prior agreement and violating this may be a reason for legal punishment on piracy.
5. If there is any incorrect or insufficient content in this user's manual, notify it to Customer Support Center.

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CH1. Product Introduction

1-1. Product Contents

After removing packing materials of this product, check whether all following contents are included.



Main Body (NVR):

This converts the analog video and audio signal to the digital signal and saves on HDD.



Adapter(or POWER CABLE only for 16ch):

This 48V adapter supplies power or power cable to the product.



MOUSE:

This is an controller for convenience.



Remote Controller:

This is an IR remote controller for convenience.



Battery:

These are 2(two) battery for the remote controller.

1-2. Product Characteristics

1) High quality picture

This enables recording and playing high quality digital image.

2) High reliability

With Embedded hardware and software design, this maintains higher product reliability.

3) Simple usage

This allows users to use it conveniently by placing control buttons similar to existing ones on VCR, and users can easily learn the usage.

4) Pentaplex System

Pentaplex System allows live, recording, backup, networking and playback simultaneously.

5) Selectable recording setup

For recording methods, users can select the frame rate, resolution and video quality individually in order to be appropriate for user's environment.

6) Remote monitoring

With using exclusive line or Internet network, you can search or monitor recorded images remotely by installing exclusive client program on Windows PC or Mac.

7) Backup

You can backup with a versatile external USB devices.

8) Audio recording

You can record all sound inputs simultaneously. Moreover, you can listen to the sound in search and live monitoring and play mode.

9) Various recording methods

This provides convenient use with manual recording, recording by dates and days, hourly schedule recording, sensor and motion detection event recording and others to enable unmanned monitoring.

10) Various total monitoring features

You can cover any security scenario through various sensor inputs and contact output control.

11) Display information in easy-to-understand information method

This enhanced convenience of user by displaying information (date, time, recording method, recording frame number, HDD capacity and others) in monitoring, recording and playing mode in easy-to-understand way.

12) P/T/Z control

By built in RS485, various P/T/Z cameras can be used.

13) Dual CODEC for video transmission

NVR can send 120 fps (based on CIF) regardless of the local recording and viewing setup regardless with recording setup.

14) Web browser support

You can monitor and playback the video and control the PTZ camera by internet explorer.

15) Built in S.M.A.R.T.

You can automatically check the health of the hard disk drives.

16) Language pack

Basically NVR has multiple language set, furthermore you can choose the language set if you want.

17) Touch LED Switch

You can operate with touch LED switch in front panel.

1-3. Name of Each Part

[Front Panel]

< NVST IL4204E/08E >



1. USB : These USB ports are for mouse and USB devices. You should connect correctly the USB devices and mouse as picture directed.

2. IR RECEIVER : It is for remote controller.

3. STATUS RAMPS

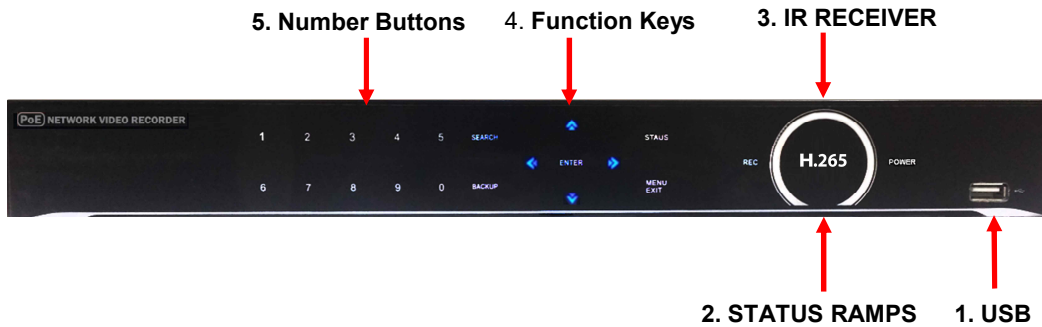
POWER : Blue color back light. Power indicator.

RECORD : Red. Indicate the recording.

NETWORK : Green. Lit on connecting the network

[Front Panel]

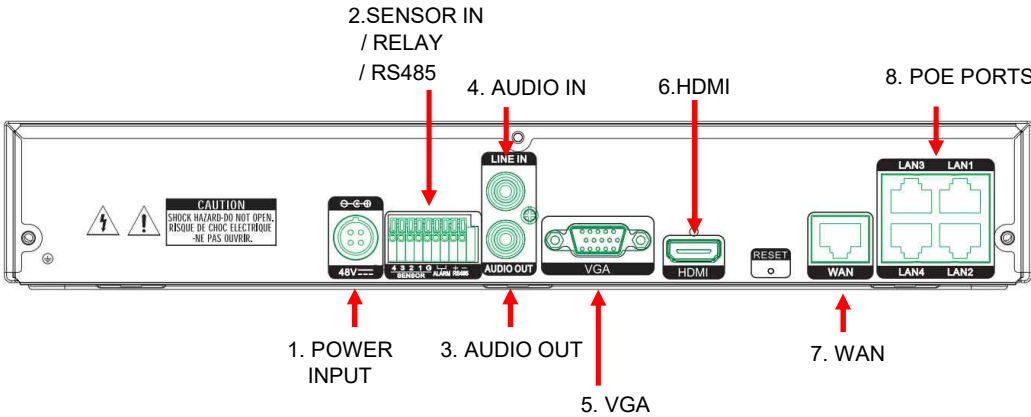
<NVST IL4216E>



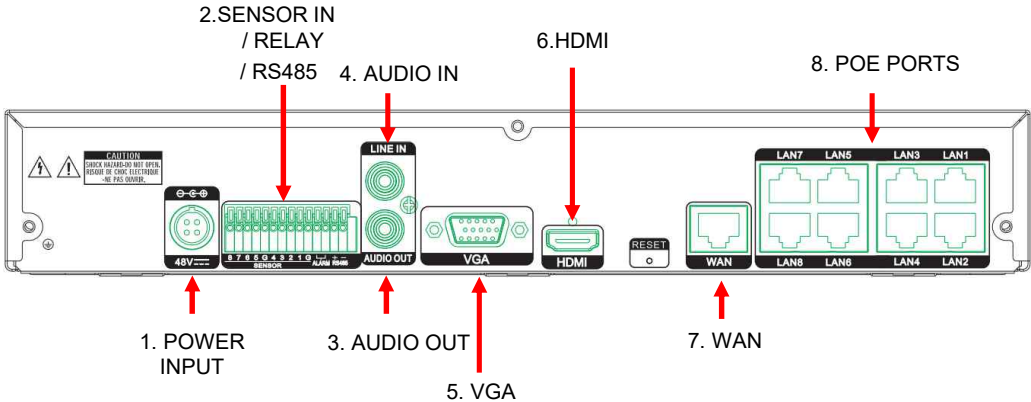
1. **USB** : These USB ports are for mouse and USB devices. You should connect correctly the USB devices and mouse as picture directed.
2. **Status lamps**
 POWER : Blue color back light. Power indicator.
 RECORD : Red. Indicate the recording.
 NETWORK : Green. Lit on connecting the network
3. **IR RECEIVER** : It is for remote controller.
4. **Function keys**
 - 1) MENU : It will move to the setup screen from the live mode.
 - 2) SEARCH : It will change to the playback mode from the live mode.
 - 3) BACKUP : It will move to the backup screen from the live or play mode.
5. **Number buttons** : If you press this button, it will be changed to full screen in live viewing or playback. If you want to go to 16ch, push the 0 and 6.
 (※ In menu and password setting, it is automatically converted to number buttons)

[Rear Panel]

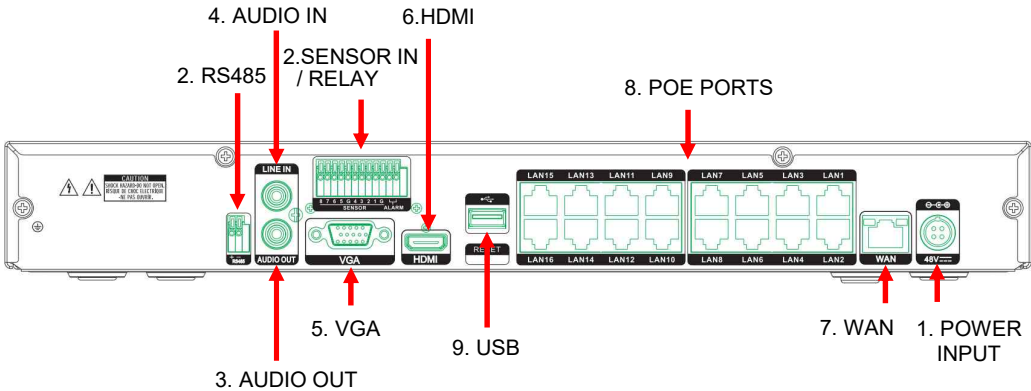
<4 CH>



<8 CH>



<16 CH>



1. **POWER INPUT**
2. **SENSOR IN** : This terminals can be connected to external sensors.
RELAY : This terminal blocks connect external electric devices to the product (Warning Lamp and others).
RS485 : For control the pan and tile cameras. Make sure that the polarity.
3. **AUDIO OUT** : RCA audio out terminal.
4. **AUDIO IN** : RCA audio in terminals.
5. **VGA** : video output for VGA display.
6. **HDMI** : Real HD output for high resolution monitor.
7. **WAN** : This is the Gigabit Ethernet LAN cable connection terminal for NVR.
8. **POE PORTS** : POE connection terminal for IP Cameras.

***Only for 16ch**


9. **USB** : USB port for mouse and USB devices. You should connect correctly the USB devices and mouse as picture directed

❖ *For more details, refer to [CH 2. Installation Method and Cautions].*

CH2. Installation Method and Cautions

2-1. Cautions

WARNING
Risk of electric shock.
Do not open the cover of the product.
Servicing of this product by unauthorized personnel is prohibited
and will result in a void of warranty.



In order to ensure the most stable conditions for power, the use
of a UPS (Uninterrupted Power Supply) is recommended.

- Avoid installing the product where there are direct rays or it is hot by locating near from heat generator. (May cause fire)
- Do not put vase, flowerpot, cup, cosmetics, drug, and anything the contain water on product. (May cause fire or electric shock, and it may injure people by falling)
- Do not insert or drop any metal object (coin, hair pin) or flammable object (match, paper) into air hole. (May cause fire or electric shock)
- Do not put any heavy object on it. (May injure people by being fell or destroyed.)
- Put power plug surely not to be moved. (If not, this may cause fire.)
- Unplug power plug and antenna when there are thunders and lightening. (May cause fire.)
- For cleaning the product, wipe surface with dry towel. Using chemical agent or cleaner may change the color and unpeel paint. Do not put several plugs at same time. (May cause electric shock.) If there is smoke or strange smell, stop operation. In this case, turn the power off and unplug it, and then contact our service center. (If you keep using it, this may cause fire or electric shock.)
- Do not unplug by pulling cord. (If cord is damaged, it may cause fire or electric shock.)
- Do not plug or unplug with wet hands. (May cause electric shock.)

- Keep the power cord untwisted. (May cause fire or electric shock.)
- Use proper adapter. (Using too much electric power may cause fire or electric shock.)
- Do not install it at where exposed to rain and wind and water drop. (May cause fire, electric shock and transformation.)
- Keep away from fire. (May cause fire.)
- Do not disassemble or remodel on your own. (May cause malfunction or electric shock.)
- Do not put next to flammable materials like flammable spray. (May cause fire.)
- Do not install it at a place with too much dirt. (May cause fire.)
- Do not install it on unstable places like shaking table and inclined place or shaking place. (May injure users by falling down or being upside down.)
- Do not put an heavy object on power cord or avoid it from being pressed by the device. (May cause fire or electric shock.)
- In case of using extension cord, do not use several devices at same time. (May cause fire with abnormal heating of extension.)
- When there are dirt on power plug pin or power outlet, clean it nicely. (May cause fire.)
- Do not damage on power cord or plug, and bend or twist or pull too much, and put it between other objects or heat. If power outlet insertion part is not tight, do not use it. (May cause fire or electric shock.)
- Do not drop or give a shock to the product. (May injure people or cause malfunction.)
- Do not touch power adaptor or signal controller. (May cause electric shock.)
- Do not put any object too close to block cooling fan. (May cause fire.)
- In case of exchanging batteries with improper type, there might be danger of explosion.
- For used batteries, throw away separately from other garbage.
- When you take out batteries, avoid children from eating them by mistake. Keep them away from children. (If a child ate them, contact a doctor right away.)

Note :

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

This device complies with the part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operations.

FCC Warning :

This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

CE Warning : This is a Class A product. In a domestic environment this may cause radio interference in which case the user may be required to take adequate measures.

This product has obtained EMI registration.

2-2 Product Installation

This product may be composed of camera and monitor in default, and additionally the sensor, microphone, speaker and PC for network can be connected if necessary.

2-2-1. Power Connection

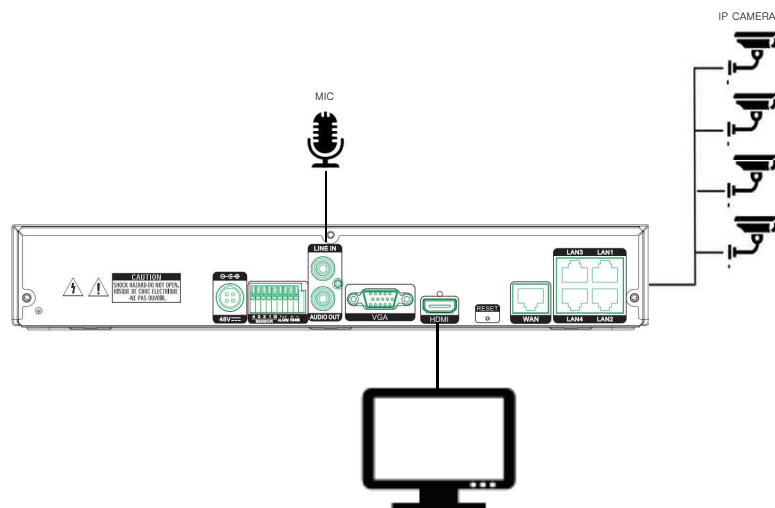
1) Connect adapter or power cable to power input terminal at rear side.
(free voltage from 100V to 240V, 50/60Hz)

※ You must operate it at the rated voltage instructed on the user's manual. In case power higher than the rated voltage is supplied, it may cause damages on product.

2-2-2. Connecting External Device

- ※ Connect it when power of the product is off.
- ※ Read through user's manual for the device you are connecting carefully.

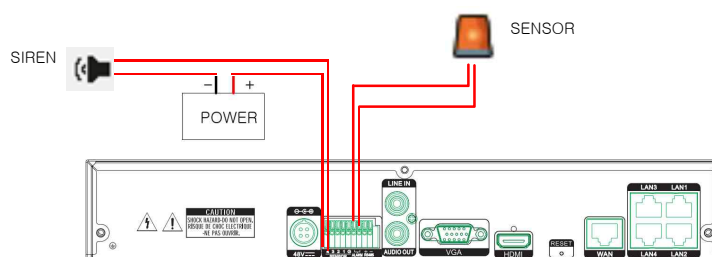
1) How to Connect External Video/Audio Device



- Connect cameras to POE PORTS by channels.
- Connect microphone (AMP) to AUDIO IN by channels.
- Connect VGA OUT to VIDEO IN of monitor.
- Connect HD output to HD Monitor.
- Connect AUDIO OUT to AUDIO IN of monitor (or speaker).

2) How to connect external sensor

Sensor terminal is composed of 1 input channel and 1 output channel. Sensor out terminal is relay output with 1A, 24V or 0.5A,125V.



Sensor In : Connect the sensors. The sensor are composed of both signal and ground terminals, with a voltage difference of 5V. In the case that the sensor used for input is of the N/O (Normal Open) type, when the voltage difference between the signal and ground falls to 0V (short), the NVR can use this as a trigger to start alarm/sensor based recording.

Sensor Out : Connecting external electrical devices

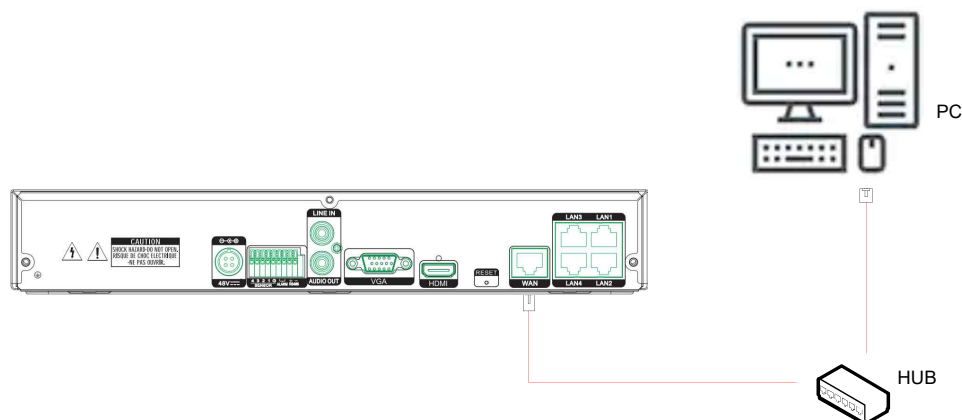
The relay output terminal does not provide power, and functions only on an ON/OFF basis via a relay. Normally, the signal and ground should be on an OPEN basis, and the NVR will complete the relay connection.

3) Connecting with PC using LAN cable

If you want to connect NVR to PC directly, use LAN cable, and if you want to use HUB, connect cable via hub.

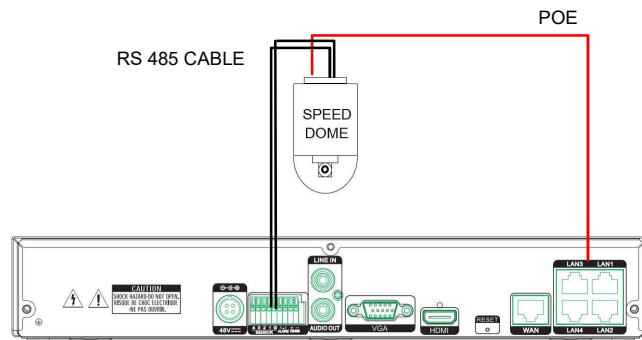
*Hub : This is a device connecting one office to devices located near with using cable when you organize LAN

*Cable : This is standard UTP cable used for communication among devices through Hub and others when you organize LAN



4) Connection Using PTZ camera

In case of using pan and tilt cameras, connect PAN/TILT DRIVE to product as shown at following figure.



5) Installing Hard disk drive

In case of installing the hard disk drive, open the upper case and install the hard disk drive on the hard bracket. Remember that the main power should be off to install the hard disk drive. If you have any trouble, please contact the technical support.

CH3. How to Use

3-1. General Usage Information

This NVR can be operated with a mouse or remote controller under the four main modes listed below:

Live Mode – This is the “main or default” mode. From this mode you can view in real time all currently operating cameras, information regarding camera status, and have access to Pan/Tilt camera controls. In addition, system status information will be shown during live mode, and other modes can be entered from Live mode.

Setup Mode – The user will be able to customize settings for Live viewing, Recording, Backup, and Camera related devices under the Setup Mode.

Search Mode – In Search Mode, the user will be able to review all recorded footage in the case that an event must be reviewed using a calendar or event based search.

Backup Mode – In Backup Mode, the user will be able to archive the desired data to the preferred supported media of their choice (ex. External CD&DVD RW, USB Backup, Remote Client Software, etc.)

Password Protection – The NVR system will utilize a user ID and password system to prevent unauthorized usage of this product. Control of the system will only be possible after entering a proper ID and password as illustrated below. (Factory Default settings are blank for these fields).

IDs and passwords should be managed by a system administrator, as different users may be given different levels of access to the NVR.

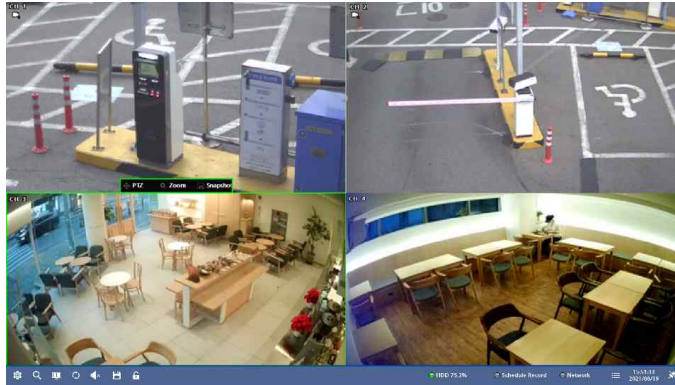
The image shows a 'Log In' dialog box with a dark blue header. Below the header, there are two input fields: the first contains the text 'admin' and the second is empty. Below the input fields is a virtual keyboard with the following layout:

- Row 1: ` ` 1 2 3 4 5 6 7 8 9 0 - = \
- Row 2: q w e r t y u i o p [] <-
- Row 3: a s d f g h j k l ; '
- Row 4: Shift z x c v b n m , . /

Below the keyboard is a 'Space' label. At the bottom of the dialog box are two buttons: a yellow 'OK' button and a grey 'CANCEL' button.

3-2. LIVE Mode





In this section you will know how to split the video mode into 1, 4, 6, 8, 9, 12, 16, as well as auto sequencing, PTZ Control, Mouse control, Setup configurations, Backup.



3-2-1. LIVE Mode Control

1) Live View Status














You may use the Live Menu Bar located at the bottom for quick shortcuts and view status of certain items.

| | |
|---|-----------------------------|
|  | Recording indicator |
|  | Event recording indicator |
|  | Motion detection indicator |
|  | Sensor activation indicator |

2) Live Menu Bar

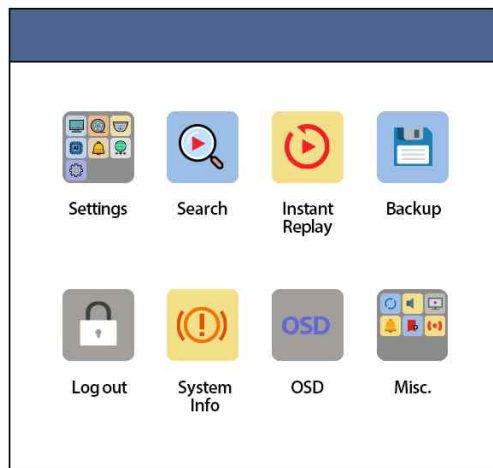
You may use the Live Menu Bar located at the bottom for quick shortcuts and view status of certain items.



| | |
|---|--|
|  | Go to setup |
|  | Go to playback |
|  | Screen Split mode change |
|  | Sequence activation |
|  | Audio out channel & Audio Mute indicator |
|  | Backup |
|  | Lock/ Unlock indicator |
|  | Hard drive usage & lamp |
|  | Scheduler activation indicator |
|  | Network connection indicator |
|  | Search Event List indicator |
|  | Date & Time |
|  | Live Menu Bar (Fix or auto hide) |

3) Live Popup Menu

By Right-Clicking anywhere on Live mode, you may view the Live Popup Menu. By using the Live Popup Menu, you can quickly jump to the necessary configuration and settings.



4) Live Toolbar

When a channel is selected on live mode, the live toolbar is displayed as follows.
You can enter PTZ or Zoom mode or use Snapshot function.

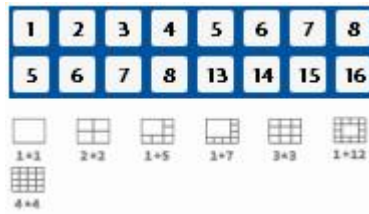


3-2-2. LIVE Mode Feature

1) Setup : refer to 3-4

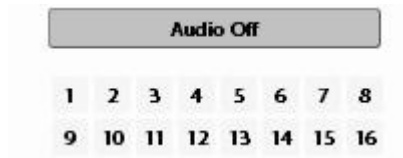
2) Split.

You can change video split mode for Live View. Click the channel number at the top to switch to the channel on the page.



3) Audio Out

You can choose the audio out from this menu.



4) Instant Replay

This is very convenient function to catch the abrupt accident. During live viewing, you can go directly to the playback screen.

If you choose the 'Instant Replay' it immediately switches to search mode and playback the video.

5) Search : refer to 3-3

6) Backup

There are two ways to enter the backup. The first one is that right click on the live screen, and the second one is that enter directly from 'Search' upon playback. If you choose the 'backup' from the live menu, below backup screen appears.

- You can set the backup device, time and channel from the backup screen.

Backup

Device

USB

None

Type

exe

From

00:00:00

To

00:00:00

Camera

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

All On

All Off

Audio

Event Recording

Password

Estimation

Start

Stop

Status

Exit

- After that, if you click the 'Estimation' button, it will show the estimated backup file size.



- Then click the 'Start' button.



7) Snapshot

You can save the live snapshot by this menu. All channel will be saved individually to the USB memory by JPG format . You should put in USB memory before saving.

8) Freeze

You can freeze the current live video channels.

9) PTZ (Pan, Tilt and Zoom)

It is possible to control the pan and tilt camera by itself. Press the ‘PTZ’ button to enter the PTZ mode. For Menu setting, you can set it by pressing button as displayed at bottom of window.

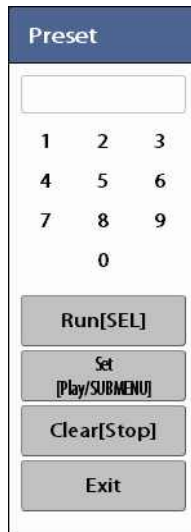
- You can set the direction of camera by using the arrow buttons.



| | |
|-------------|--|
| Preset[SEL] | Preset setup |
| One Push[8] | Auto Focus |
| Menu[7] | Camera OSD menu |
| Zoom -/+ | Zoom out/in with mouse or [1]/[2] buttons on the remote controller. |
| Focus -/+ | Adjust the focus with mouse or [3]/[4] buttons on the remote controller. |
| IRIS -/+ | Adjust the iris with mouse or [5]/[6] buttons on the remote controller. |

❖ For more details, refer to [CH 2-2. Connection Using PTZ camera] and [CH 3-4-3. Device]

- **Preset[SEL]** : You can enter the preset number using the keypad appearing the preset button or 'Enter' button on the remote controller.





| | |
|-------------|--|
| Run[SEL] | Move to preset number |
| Set[Play] | Set a position and name of a preset number |
| Clear[Stop] | Clear a preset set |
| Exit | Exit preset mode |

❖ How to use Preset

1. Click the right mouse button and choose PTZ from a live pop-up menu.
2. After you move the screen, click the set button and set the position and name.

- ※ If you choose not a specified preset, UNDEFINED is displayed on the screen.
- ※ You can set up to 32. If you choose out of valid range, there is no action.

-  : You can choose the PTZ camera with mouse or [0] buttons on the remote controller
-  : If you press Setup using mouse (or [9] button on the remote controller) in PTZ Menu, PTZ setup window will appear. You can set the pan and tilt speed, 32 preset name and tour sequence as well as dwelling time.

| | |
|-------------------|---|
| Pan Speed | Set pan speed 1~7 |
| Tilt Speed | Set tilt speed 1~7 |
| Preset dwell time | Set preset dwell time 2~60 sec |
| Tour | When you check the tour box, the preset tour starts in the order specified by the user. |

❖ How to use Tour

Choose a preset from upper left to right.

※ If you use not specified presets, it automatically skip the tour.

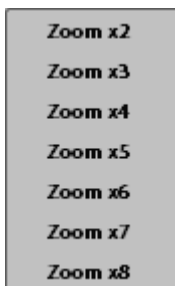
10) Zoom

Digital zoom of live screen for selected channel. It can be 8x zoom and also control the position by mouse dragging.



- **Camera[0]** : You can choose the camera for zoom with mouse or [0] buttons on the remote controller.

- **Zoom[9]** : You can zoom with mouse or [9] buttons on the remote controller.



11) Sequence

Sequence Mode On /Off: Switches screens as set on Dwell time under Screen Setup

12) OSD

This feature shows current settings of product through GUI (Graphic User Interface) and INFO button at front side is used for this feature. When you turn on power, this will show current date and time, System Lock Setting, HDD usage, Video Loss Check, Sensor ON/OFF, Motion Detection Check, Recording Status and Schedule Feature Usage. As you press INFO button once more, GUI disappear->OSD disappear->GUI appear->OSD appear will happen sequentially.

- ❖ GUI (Graphic User Interface): displaying current status on monitor as images
- ❖ OSD (On Screen Display): displaying current status on monitor as character

13) System Information

It shows the system information.



14) Lock/Log In

Logs off current user and locks NVR from any further configuration and screen setup until next Administrator logs in.

15) Alarm Control

You can control all alarms connected and the NVR system buzzer.

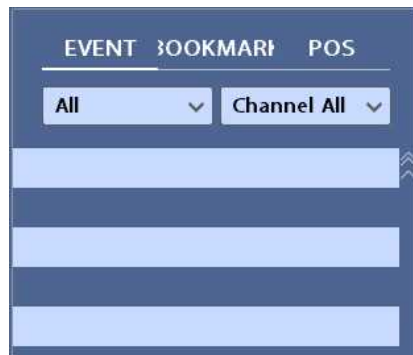


3-3. Search Mode

Search mode consists of two different modes of searching. The video data can be selected by 3 modes.

| Time | Panorama | Thumbnail |
|-----------|---|-----------|
| Time | Search by Month / Day / Time selection. | |
| Panorama | Play the specific channel continuously. | |
| Thumbnail | Play the specific channel by user defined interval. | |

In each mode, you can check the Event / Bookmark / POS as follows, and it moves to the corresponding log time by double-click



The event types and channels that can be changed differ depending on the mode and combination of EVENT, BOOKMARK and POS.

| Search Mode | Event | Bookmark | POS |
|----------------------|---|--|--|
| Time | Both event type and channel can be changed. | Both event type and channel cannot be changed. | Channel can be changed. |
| Panorama / Thumbnail | Only event type can be changed. | Both event type and channel cannot be changed. | Both event type and channel cannot be changed. |


Change pages in time mode:
 The page can be changed in two ways as follows.



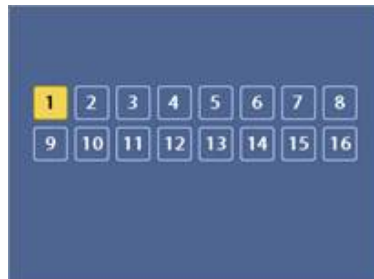
(Page Mode)



(Channel mode)

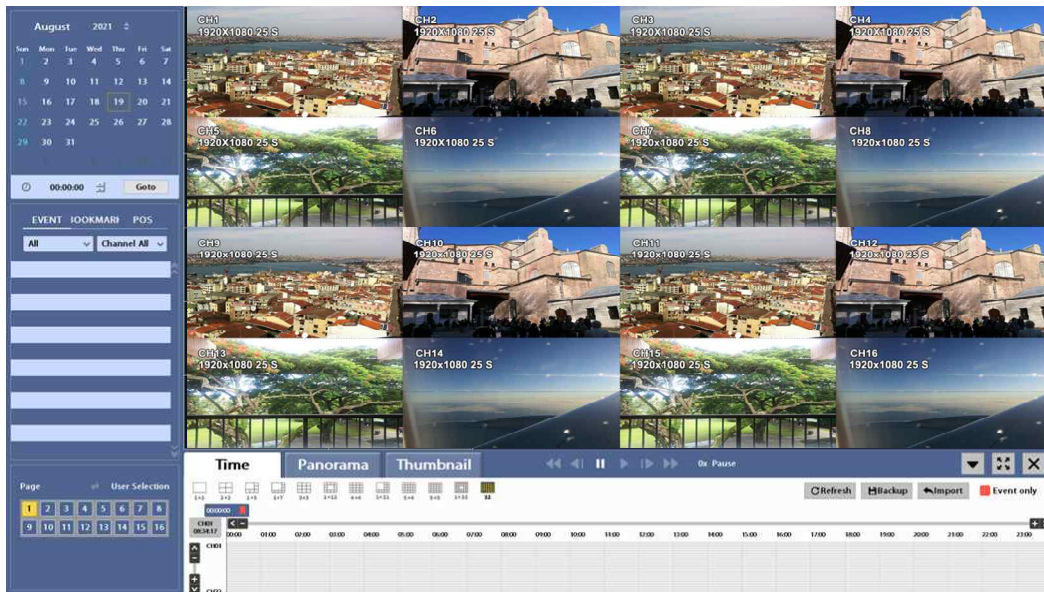
In the Page mode, it operates in the same way as the split of a live view.
 The Channel mode is changed to 1 division of the corresponding channel when clicked. To switch between the two modes, click this  icon.

Change channels in panorama/thumbnail mode:
 The function changes by changing the target channel, not by changing the page.



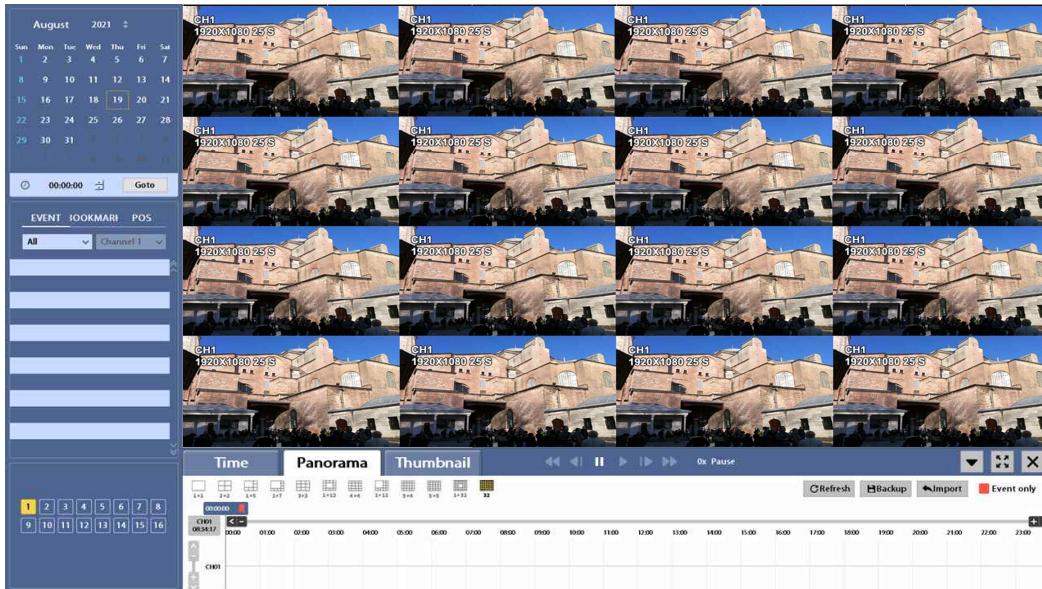
3-3-1. Search Selection Type

1) Time Based search selection



- Select the Date you wish to view by selecting a Date from Calendar.
- Select time you wish to view by selecting a time from Time Line.
- You may click on Refresh, Backup, Import, Exit , Full Screen, Hide for additional features and options.

2) Panorama Search



- Select search date from calendar
- Choose the channel and interval, then select the time from bar or typing
- The selected channel will be played individually by interval time difference

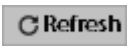






3) Thumbnail Search



- Select search date from calendar
- Choose the channel and time from bar or typing
- The selected channel will be played continuously. If you want to play faster, use the FF button.

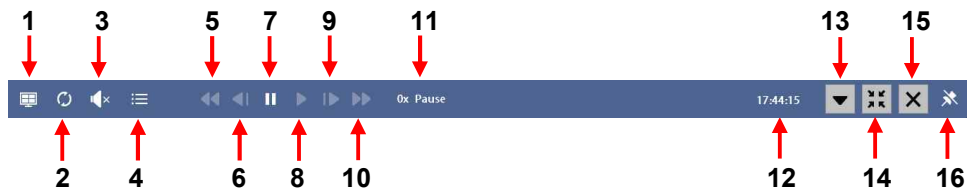
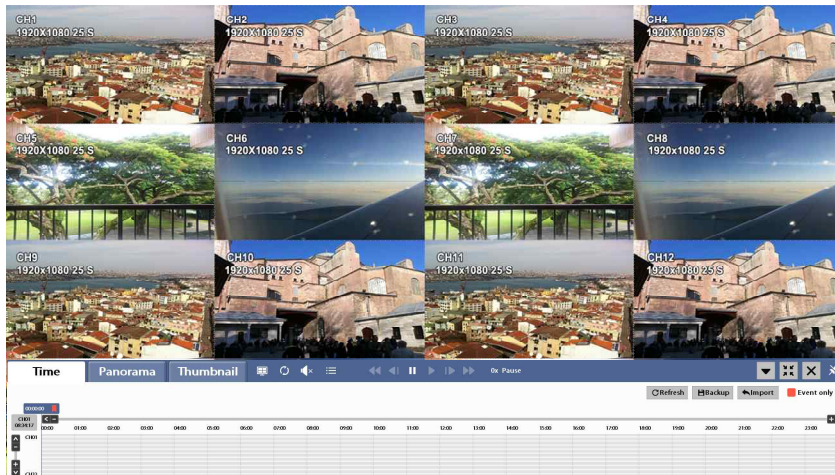
4) Search Related buttons

- You may click on Refresh, Option, Backup, Import, Exit , Full Screen, Hide for additional features and options.

| | |
|--|--|
|  Refresh | Reload all data list. |
|  Backup | Backup recorded data to external USB device. |
|  Import | Playback recorded data from external USB device. |
|  | Hide bottom of Playback Toolbar |
|  | Load playback data to full screen mode. |
|  | Move to Live video mode. |
|  Event only | Event only |

3-3-2. Play Mode

If you choose 'Full Screen', the full screen appear. You can control the play speed in here.



► Play Screen GUI

1. Split Screen
2. Sequence
3. Audio
4. Event list
5. FB (Fast Backward): FB×1, 2, 4, 8, 16, 32, 64 times faster
6. SB (Slow Backward):SBx1/2, SBx1/4
7. STILL (Pause) / Frame advance
8. Play : Forward normal speed(×1)
9. SF (Slow Forward):SFx1/2, SFx1/4
10. FF (Fast Forward): FF×2, 4, 8, 16, 32, 64 times faster
11. Playback Status information
12. date and time during playback : click to change date and time
13. Show: Timeline, Refresh, Backup, Import and Event Only
14. Cancel full screen
15. Exit playback
16. Toggle auto hide

3-4. SETUP Mode

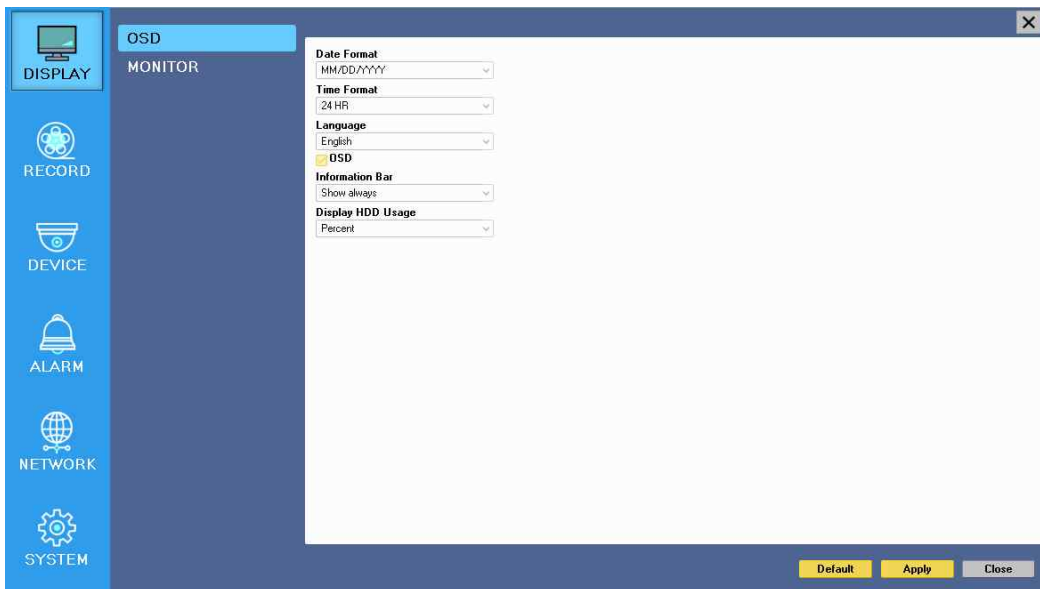
Access Setup menu from Right Clicking mouse button to Popup Menu. Configure Display, Record, Device, Alarm, Network, System which is navigated by clicking on corresponding tab menu at the top of the screen.

| | |
|---------|---|
| Apply | Apply changes |
| Default | Return to factory default settings. |
| Close | Close the menu. If there is a something that has not been applied after the change, a pop-up will be asked. |

3-4-1. Display

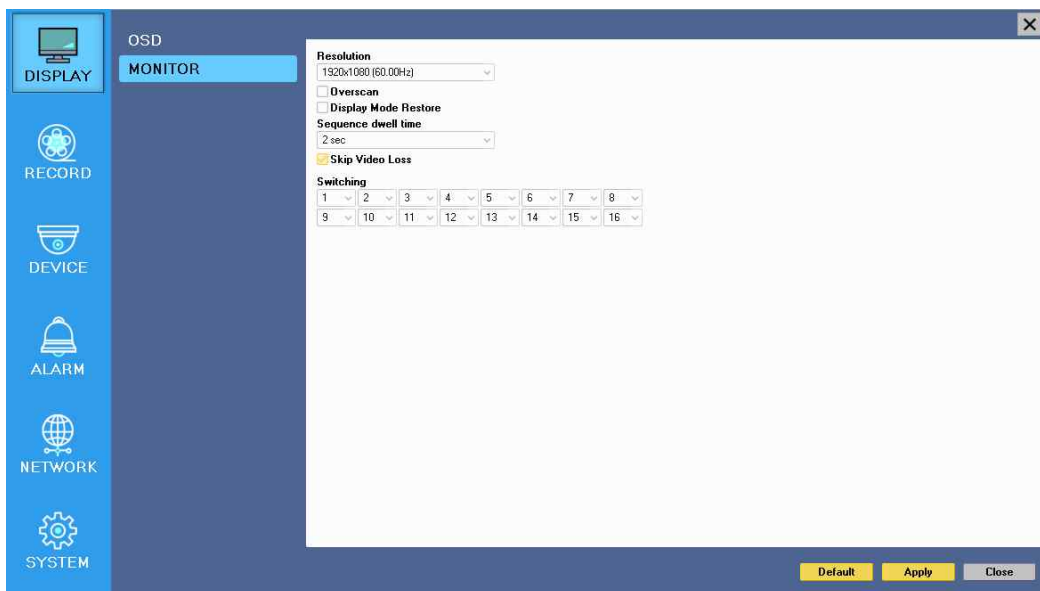
Configure OSD and Main Display setting.

1) OSD



| | |
|-------------------|---|
| Date Format | YYYY/MM/DD, MM/DD/YYYY, DD/MM/YYYY |
| Time Format | 24HR, 12H(AM/PM) |
| Language | Select system language. |
| OSD | OSD On/Off |
| Information Bar | Information Menu Bar Hide always/Auto hide/ Show always |
| Display HDD Usage | Percent/Oldest Date |

2) Monitor

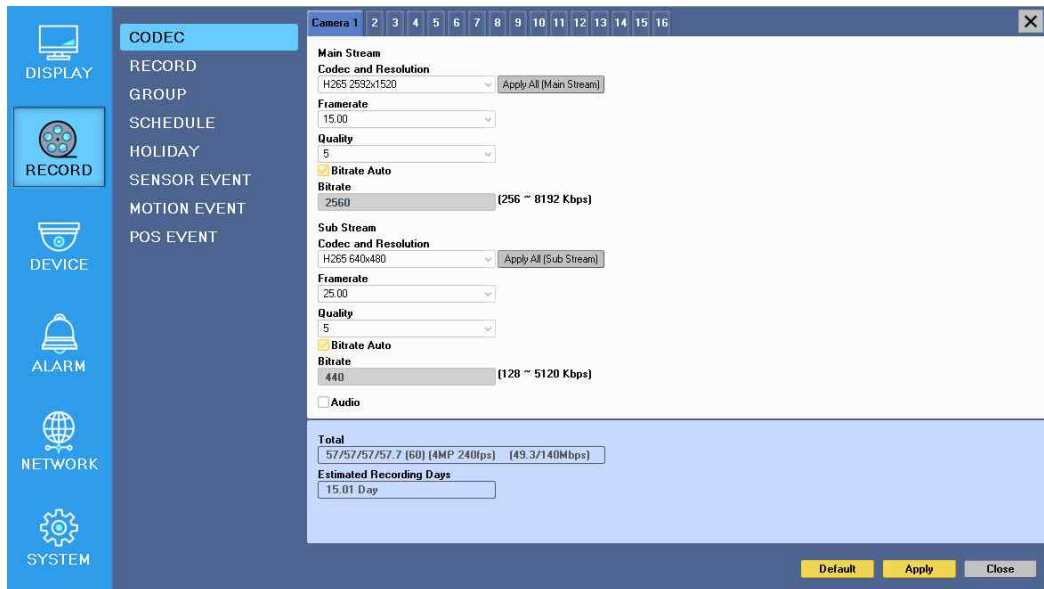


| | |
|----------------------|---|
| Resolution | 1280x720, 1920x1080, 2560x1440 |
| Overscan | Cut off a bit of each edge of the screen |
| Display Mode Restore | Restore Live display after rebooting |
| Sequence dwell time | 1 sec ~ 60 sec |
| Skip Video Loss | Skip a video loss channel when you set the sequence of the live screen. |
| Switching | Set a display for the live screen. |

3-4-2. Record

Configure and view Event In, Record, Group, Holiday settings

1) Codec



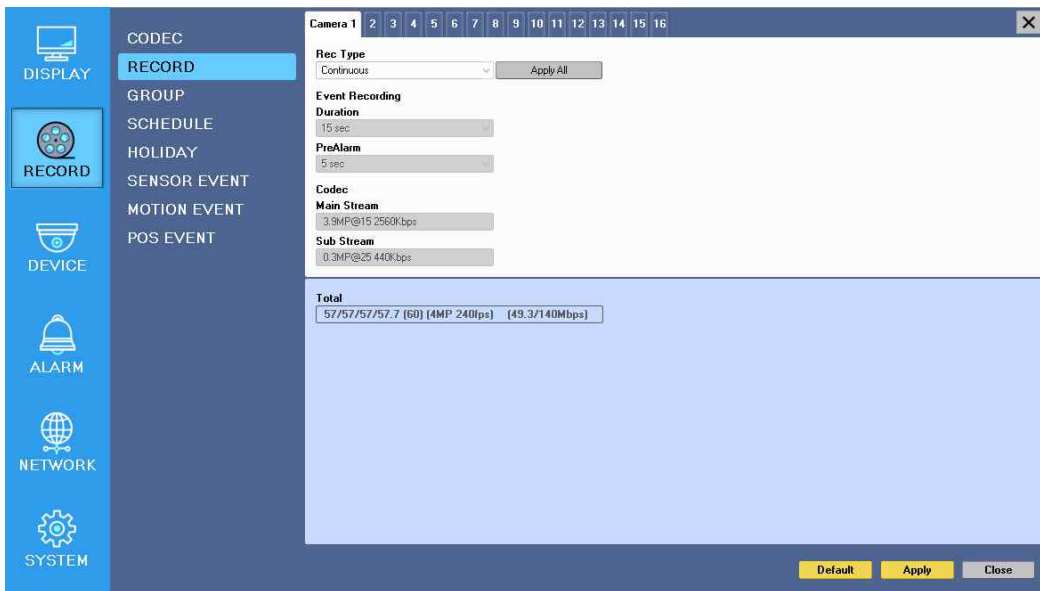
| | |
|----------------------|------------------------------------|
| Codec and Resolution | Set a codec and resolution. |
| Framerate | Set a frame per seconds. |
| Quality | Set a quality. |
| ❖ ALL Apply | Apply the setting to all channels. |

| | |
|--------------|---|
| Bitrate Auto | Automatically sets the best bitrate according to the camera resolution and fps. |
| Bitrate | Set the bitrate manually. |

| | |
|-------|----------|
| Audio | On / Off |
|-------|----------|

| | |
|----------------------------|--|
| ❖ Total | It shows the total fps. |
| ❖ Estimated Recording Days | This is an automatic calculator of the recording days. |

2) Record



| | | |
|-------------|------------------------------------|------------|
| Rec type | None, Continuous, Event, C/E | |
| ❖ Event | ❖ Duration | 5 ~ 60 sec |
| | ❖ PreAlarm | 0 ~ 10 sec |
| ❖ ALL Apply | Apply the setting to all channels. | |

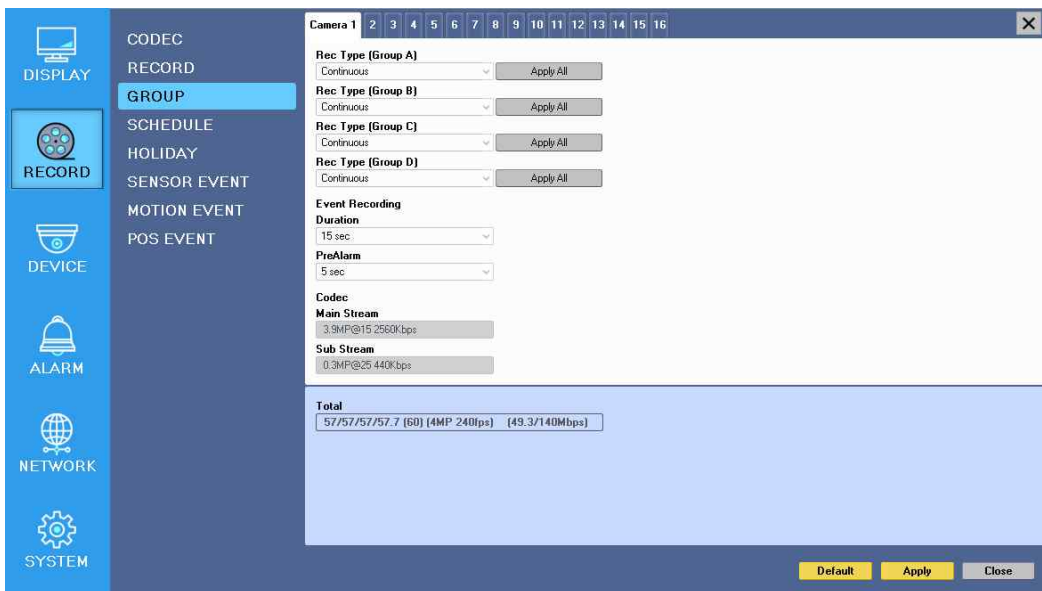
| | |
|-------------|------------------------------------|
| Main Stream | The resolution of the main stream. |
| Sub Stream | The resolution of the sub stream. |
| Bitrate | It shows Bitrate of the camera. |

| | |
|----------------------------|--|
| ❖ Total | It shows the total fps. |
| ❖ Estimated Recording Days | This is an automatic calculator of the recording days. |

- ❖ Event recording has priority in recording. In C/E recording, the recording will follow continuous recording setup in normal condition while it would follow event recording setup in event generation.
- ❖ For convenience, you can use the ‘Apply All’ menu to change with the same preference. You don’t have to setup each channel if you using the ‘Apply All’ function.
- ❖ Duration is to set post event recording time.
- ❖ Pre alarm is to set pre event recording time.
- ❖ Total shows total fps of all channels. If total fps is more than supported, it turns red. If it turns red, you need to set a lower resolution or FPS.

3) Group

- With this menu, you can set the group using the scheduler. If you choose ‘Group’ tab, you can see the similar screen with ‘Record’. The setting is similar

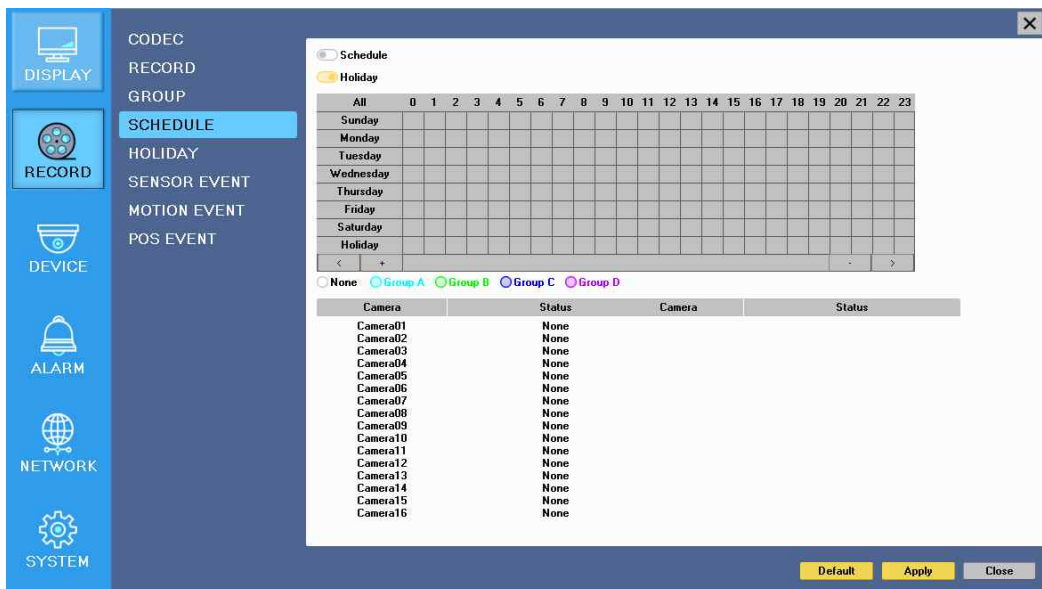


4) Schedule

- In recording, Schedule recording setting is most preferred. So if you activate the weekly scheduler, you cannot record manually.
- Schedule On : The weekly scheduler is activated.
- Holiday On : The holiday that set by user is activated.
- Since you can set recording weekly, you can reduce recording of unnecessary time period. In Scheduler window, days and channels are displayed, and recording information for each channel is displayed at bottom of window.

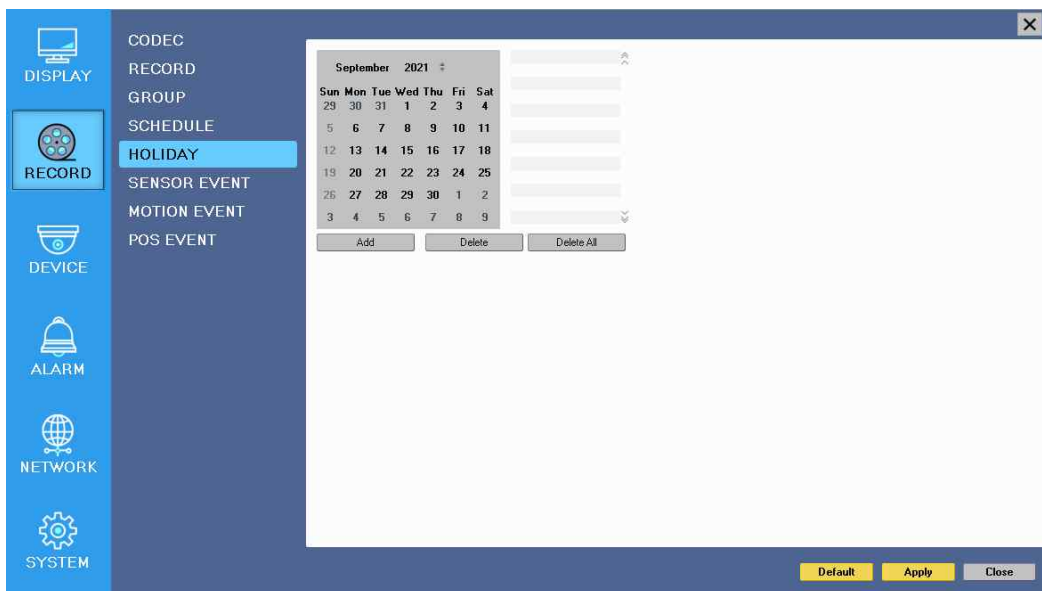
❖ How to set the weekly scheduler

1. Choose 'Scheduler' to 'On'.
2. Choose group and drag to wanted time.
3. Press the time bar , if you want to set the detailed time.
4. Press 'Enter' button to change the group of the selected area.
5. If you activate 'Holiday' scheduler, choose 'holiday'.



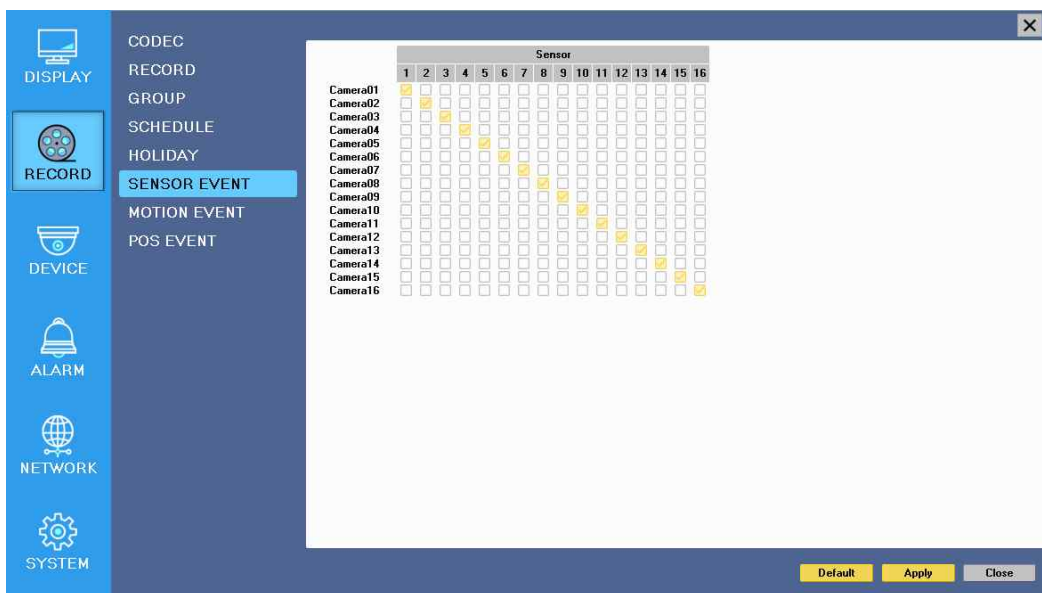
5) Holiday

With this menu, you can add the holidays. Use the 'Add' button for adding the holiday and use the 'Delete' or 'Delete All' buttons for removing the existing holidays.



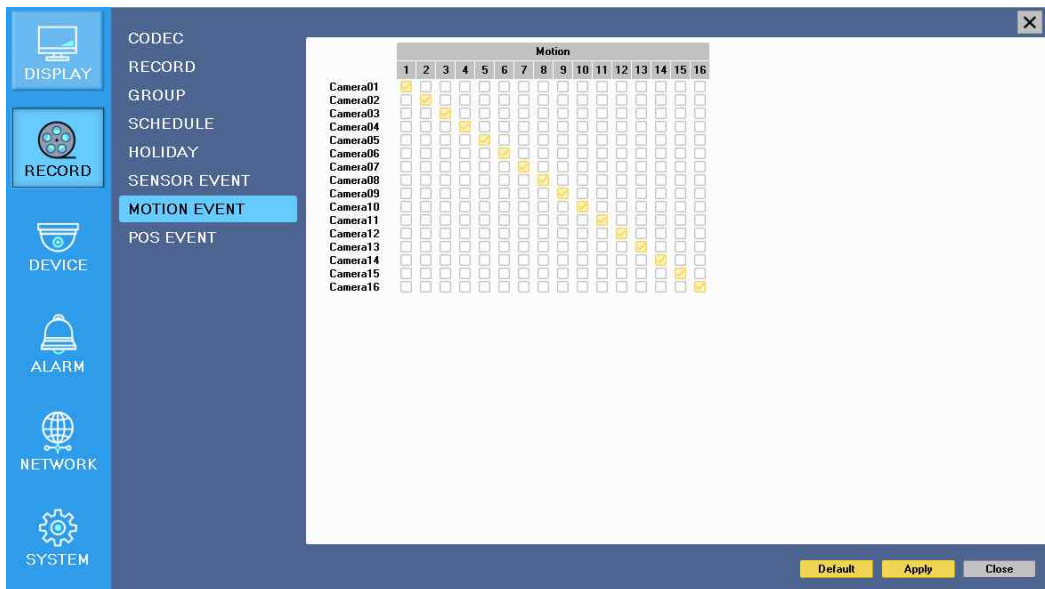
6) Sensor Event

- With this menu, you can set sensor input-setup. You can also set each channel individually.
- Although you set Motion Detection and Sensor Setting to On in Event menu, if Event Input in Rec Menu is set to None, it only detects and does not record.



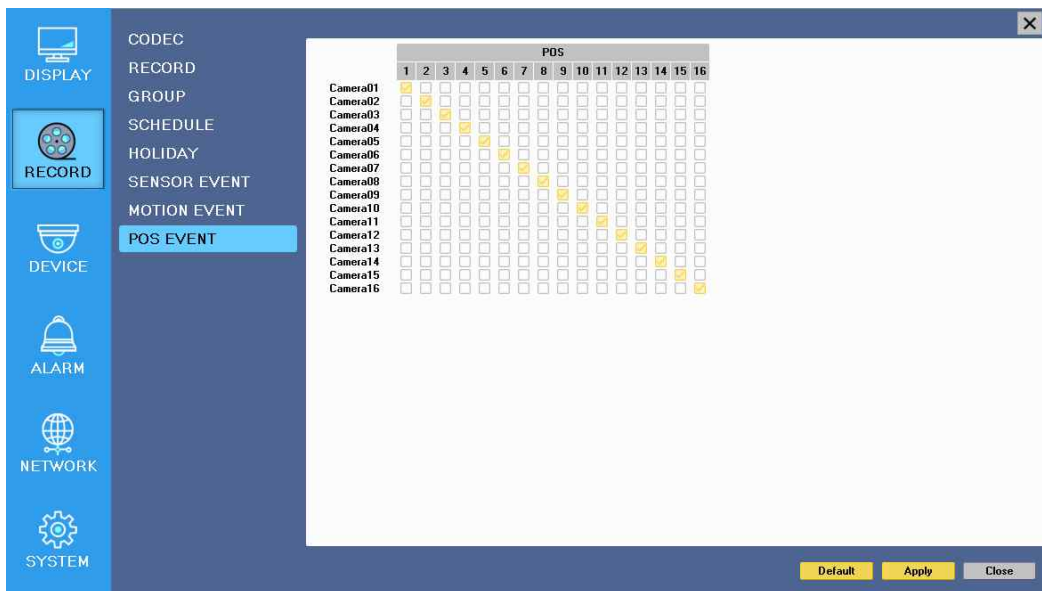
7) Motion Event

- With this menu, you can set motion detection setup. You can also set each channel individually.
- Although you set Motion Detection and Sensor Setting to On in Event menu, if Event Input in Rec Menu is set to None, it only detects and does not record.



8) POS Event

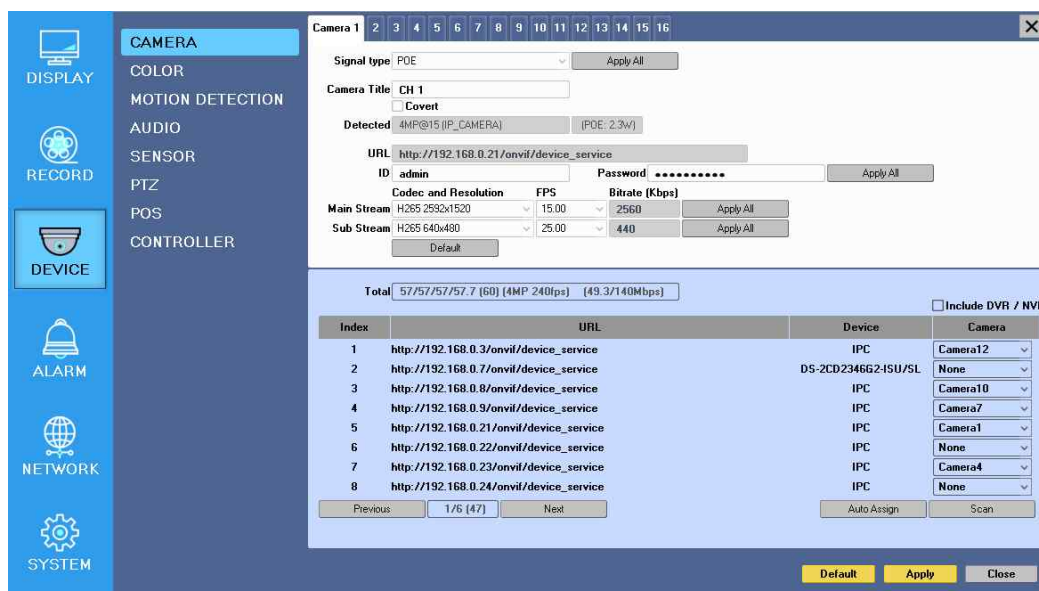
- With this menu, you can set POS setup. You can also set each channel individually.
- Although you set Motion Detection and Sensor Setting to On in Event menu, if Event Input in Rec Menu is set to None, it only detects and does not record.



3-4-3. Device

- Configure and view Camera, Audio, Motion Detection, Alarm Out, PTZ, Controller.

1) Camera



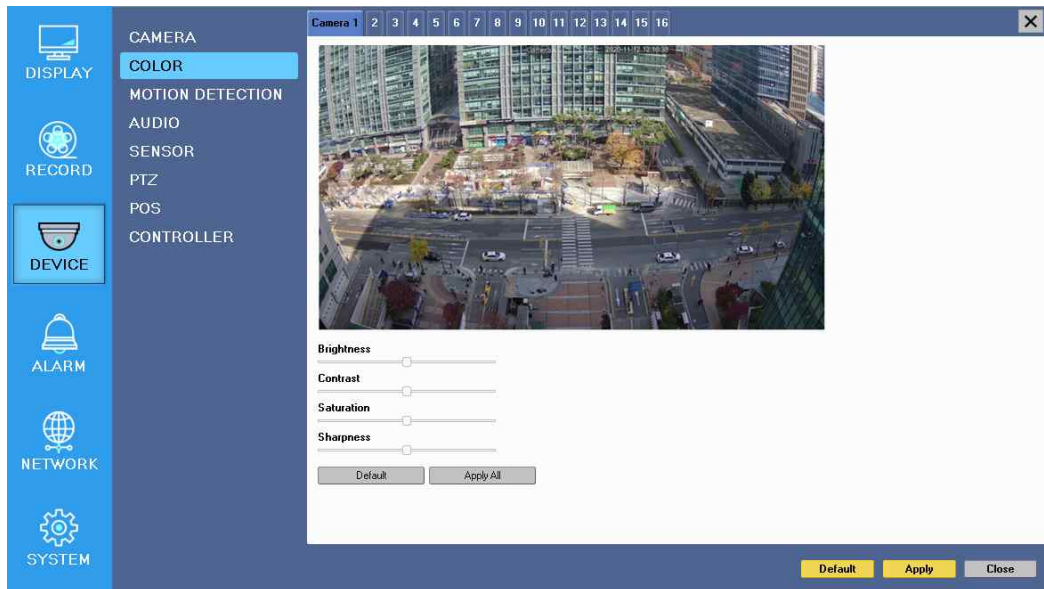
| | |
|------------------------|--|
| Signal Type | POE, IP, Disable |
| Camera Title | You can set a camera name. |
| Convert | Hide a camera from Live view but Record for future searching option. |
| Detected | Detected a camera video type |
| URL | Type IP Camera address or use Scan function |
| ID/Password | Type ID and password of the camera |
| ❖ ALL Apply | Apply the setting to all channels. |
| Main Stream/Sub Stream | It shows the main and sub stream of the camera. |
| ❖ ALL Apply | Apply the setting to all channels. |
| Default | Clear assigned camera settings. |

- ❖ For convenience, you can use the ‘Scan’ function to connect all your IP cameras on your network or NVR.



| | |
|-------------------|---|
| Include DVR / NVR | Display local cameras of DVR / NVR |
| Previous | Go to previous page |
| Next | Go to next page |
| Auto Assign | Auto assign IP cameras on the list to each channel. |
| Scan | Scan IP cameras |

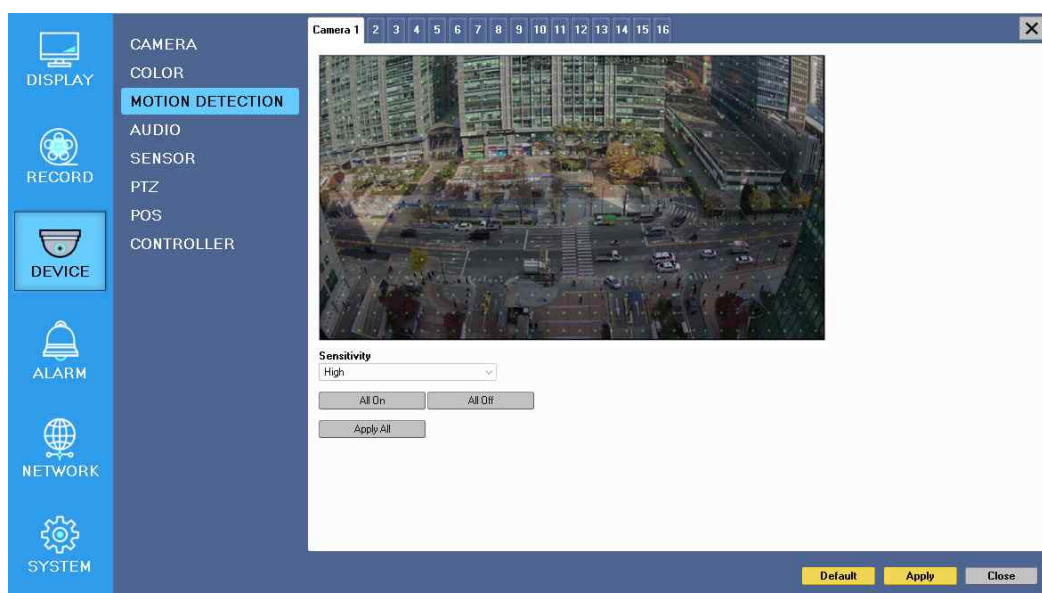
2) Color



| | |
|-------------|------------------------------------|
| Brightness | Adjust Brightness |
| Contrast | Adjust Contrast |
| Saturation | Adjust Saturation |
| Sharpness | Adjust Sharpness |
| Default | Change to default settings |
| ❖ ALL Apply | Apply the setting to all channels. |

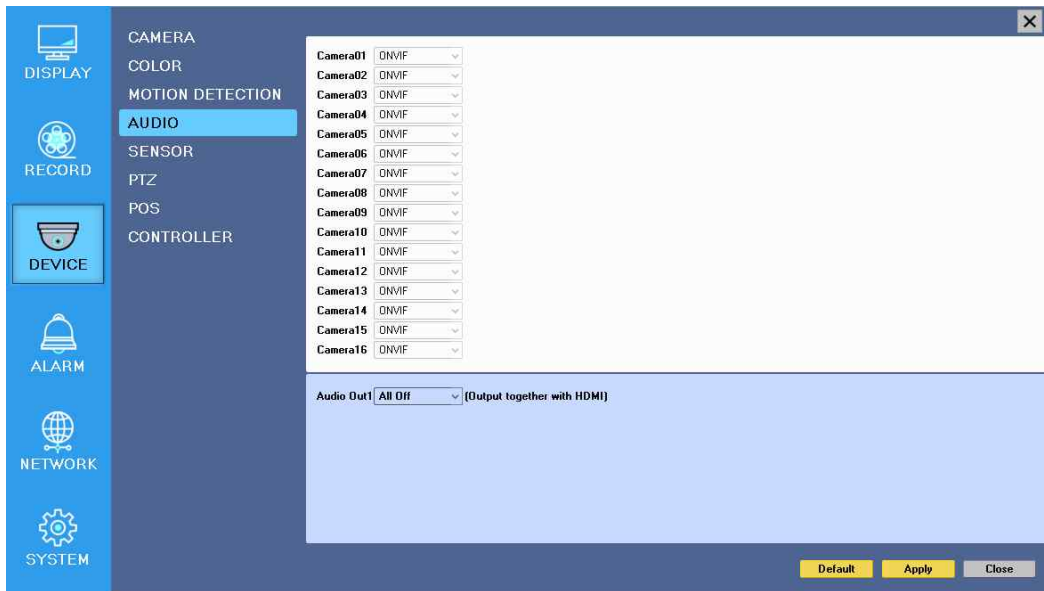
3) Motion Detection

- Change settings for Motion Grid selection and Sensitivity Level. You can set multiple area.



| | |
|-------------|--|
| Sensitivity | Low, Mid, High |
| All On | This will activate the motion detection of the all area. |
| All Off | This will deactivate the motion detection of the all area. |
| Apply All | Apply the setting to all channels. |

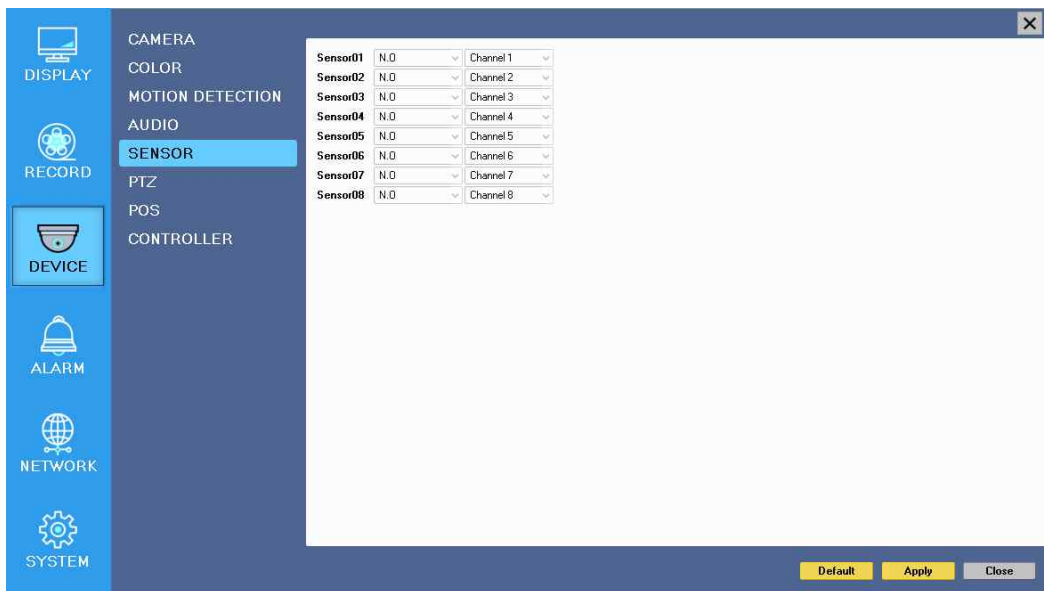
4) Audio



| | |
|-------------|--|
| Camera | Assign audio input to a video channel. |
| Audio Out 1 | Select which channel will be heard during Live View with HDMI. |
| Audio Out 2 | Select which channel will be heard during Live View. |

5) Sensor

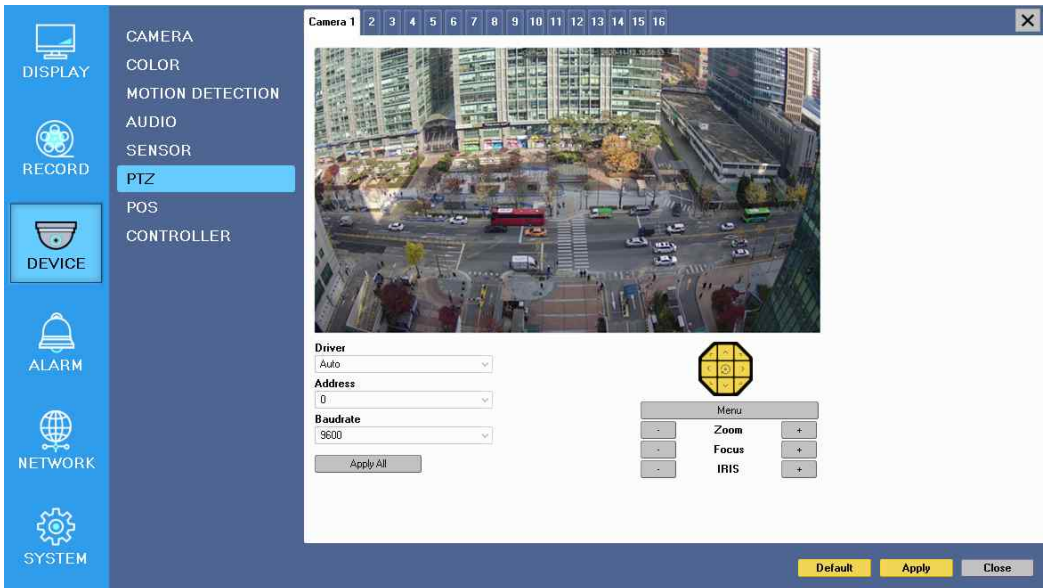
Selectable option is N.O. (Normally Open) / N.C. (Normally Close)



❖ For more details, refer to [CH 2. Installation Method and Cautions].

6) PTZ

Configure Pan/Tilt/Zoom camera for control via NVR System and Remote client.



| | |
|----------|--|
| Driver | Choose Driver to be suitable for PAN/TILT Camera manufacturer. |
| Address | Choose address to be suitable for PAN/TILT Camera manufacturer. |
| Baudrate | Choose baudrate to be suitable for PAN/TILT Camera manufacturer. |

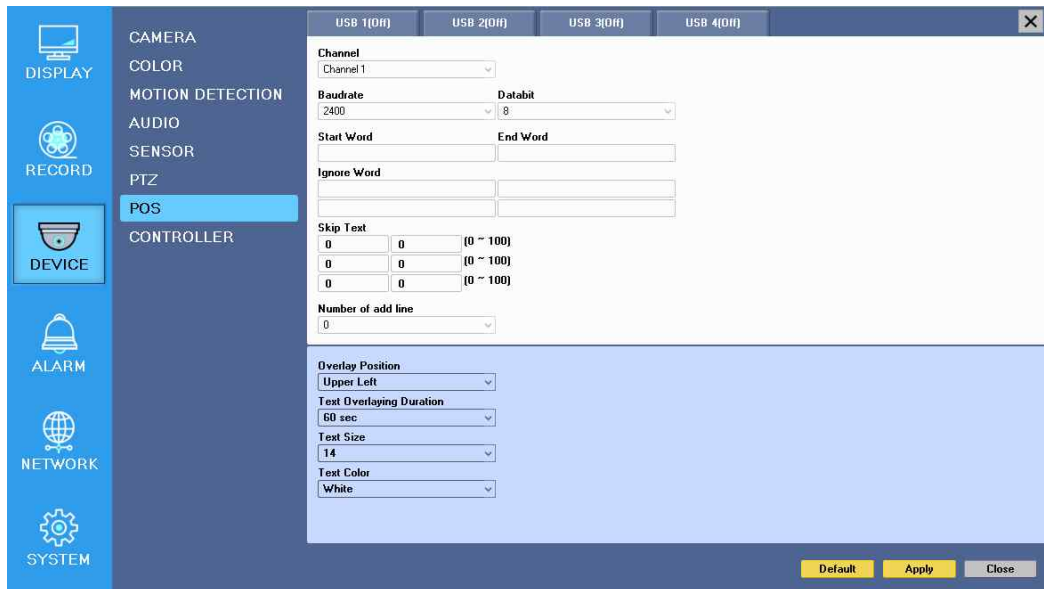
- You have to set Comport value according to the connected camera.

❖ For connection of PAN/TILT Camera Receiver part, refer to user's manual of the related PAN/TILT Camera.

7) POS

This sets the POS interface(text inserter) with the NVR and cash register.

※ If you are using a USB hub, you can use up to 4 USB POS.



| | |
|--------------------|---|
| Channel | Select a Channel of POS |
| Baudrate | Select a baudrate of POS |
| Batabit | Select a databit of POS |
| Start Word | Type a start word of transaction |
| End Word | Type a end word of transaction. Text will be embedded into the picture between start word and end word. |
| Ignore Word | Type a word which you want ignore during text insertion. |
| Skip Text | Skip String range. |
| Number of add line | This will determine the adding line after end word. (0~4) |

| | |
|--------------------------|---|
| Overlay Position | This will determine the text position. |
| Text Overlaying Duration | This will determine how long display the text up to 120 seconds. (60~120 sec) |
| Text Size | Change text size. |
| Text Color | Change text color. |

❖ How to Connect POS

1. Connect USB to RS232 serial cable between POS and NVR.



*POS



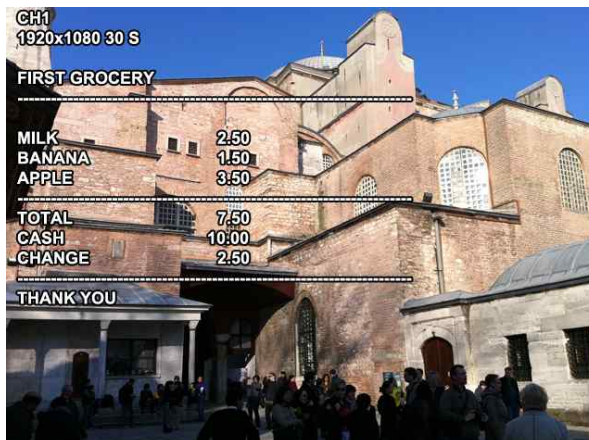
*NVR

2. To set manually, at first you should know the setting values of the POS. You can get the information from the POS setting screen.

| Register | Info | Condition | Setting | | | | | | | ETC |
|----------|---------|-----------|---------|--|--|--|--|--|--|-----|
| Counter | POS | Place | Receipt | | | | | | | |
| Setting | Setting | Setting | Setting | | | | | | | |

| Device Setup | | | | |
|-----------------|-----|-------|------|------------|
| Device | Use | Part | Port | Protocol |
| Barcode Scanner | No | | | |
| Receipt Printer | Yes | PR4RT | COM1 | 4800,8,n,1 |
| Cashbox | No | | | |
| Information | No | | | |
| Printer1 | No | | | |
| Printer2 | No | | | |
| Printer3 | No | | | |
| Printer4 | No | | | |
| Barcode Printer | No | | | |
| Terminal1 | No | | | |
| Terminal2 | No | | | |
| Terminal3 | No | | | |
| Terminal4 | No | | | |
| Telephone | No | | | |
| Save | | Close | | |

3. If your setting is correct, you can see the below NVR screen on transaction. (This is the popup screen. You can set popup in the 'Event In' setup.)



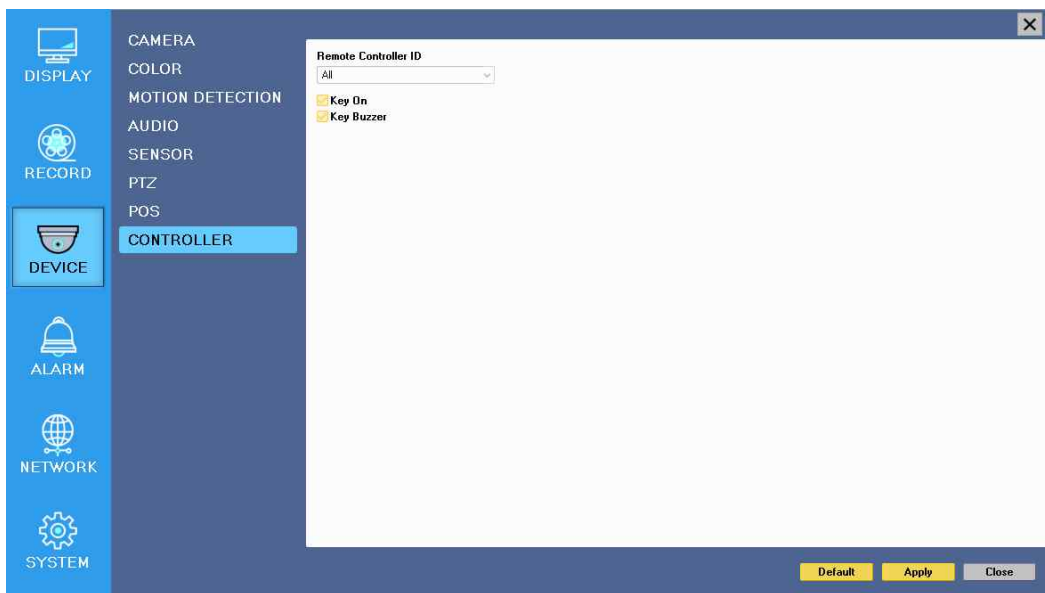
8) Controller

This sets the ID of remote control. If you have many NVRs in the same place, you can control separately the NVR by different remote control ID.

❖ Remote controller ID setup

Use the ID setup and number key to set the ID of remote control on the remote controller. You may check the ID by pressing the remote control key. The ID should be the same between the NVR and remote control.

And you can turn it on/off the key sound.

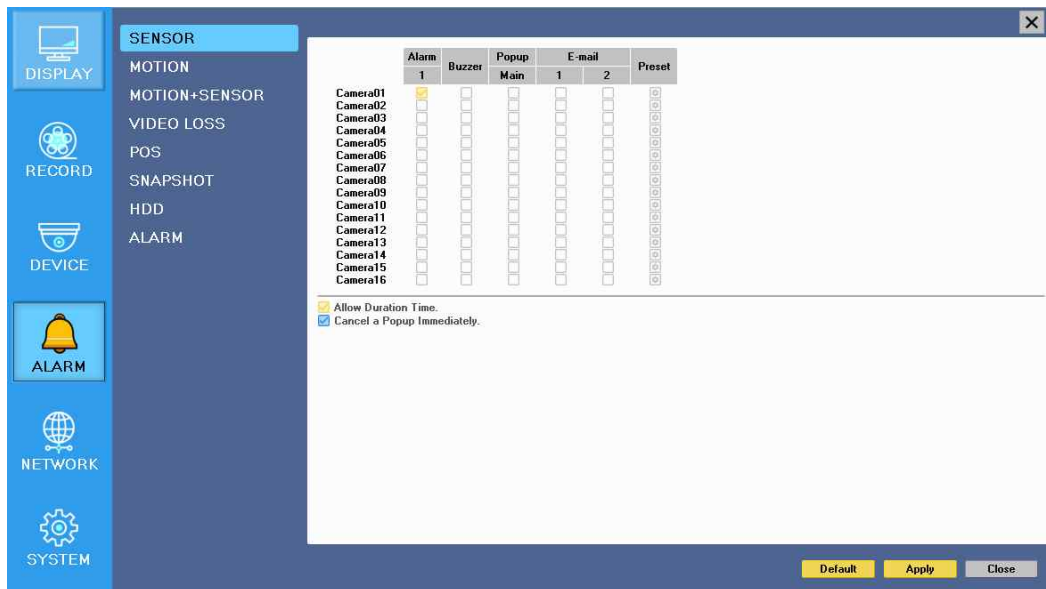


| | |
|----------------------|------------------------|
| Remote Controller ID | All, 00 ~99 |
| Key On | 16ch Front Key On /Off |
| Key Buzzer | ON / OFF |


3-4-4. Alarm

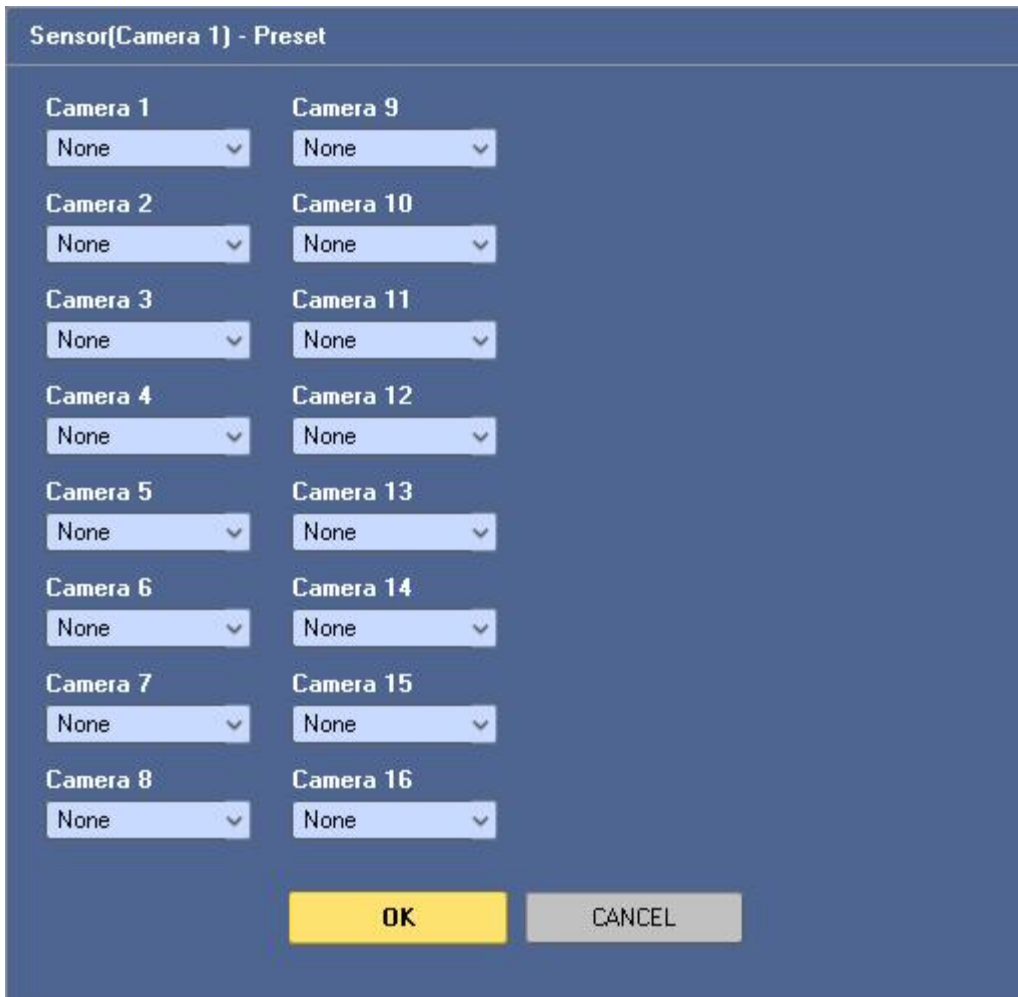
1) Sensor In

- You can choose the action after sensor in between relay, buzzer sound and pop up. Also you can choose more than one action.



- Choose a sensor connected to a channel.
- If a sensor does not work, please check again the sensor type.
- Alarm 1 is relay out.

- Also you can choose more than one action. Furthermore you can set the preset position number by a sensor input. If you click the 'setup'  icon you can see the preset screen.



Sensor(Camera 1) - Preset

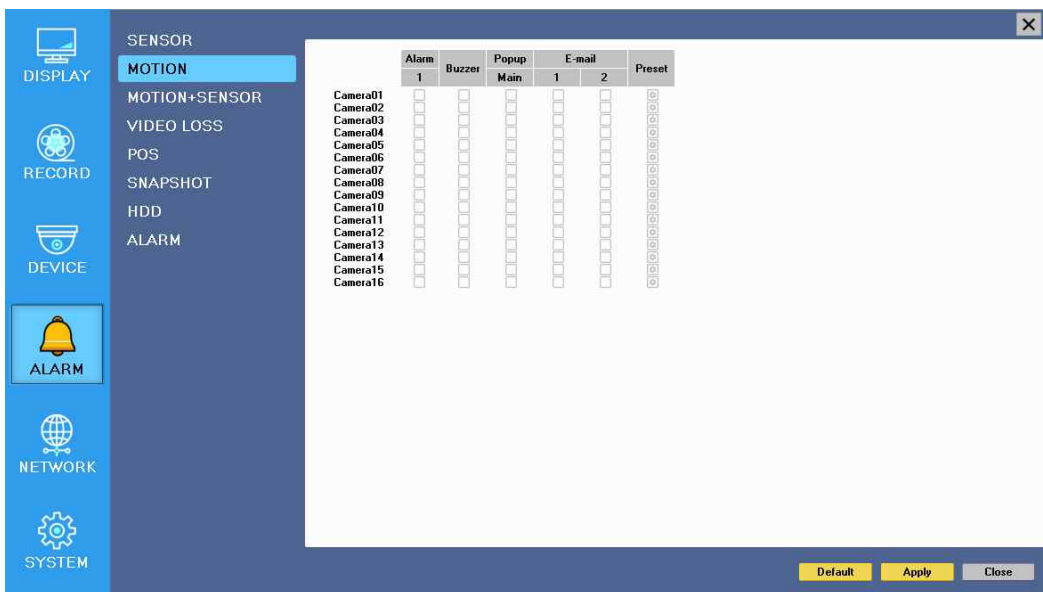
| | |
|----------|-----------|
| Camera 1 | Camera 9 |
| None | None |
| Camera 2 | Camera 10 |
| None | None |
| Camera 3 | Camera 11 |
| None | None |
| Camera 4 | Camera 12 |
| None | None |
| Camera 5 | Camera 13 |
| None | None |
| Camera 6 | Camera 14 |
| None | None |
| Camera 7 | Camera 15 |
| None | None |
| Camera 8 | Camera 16 |
| None | None |


OK CANCEL

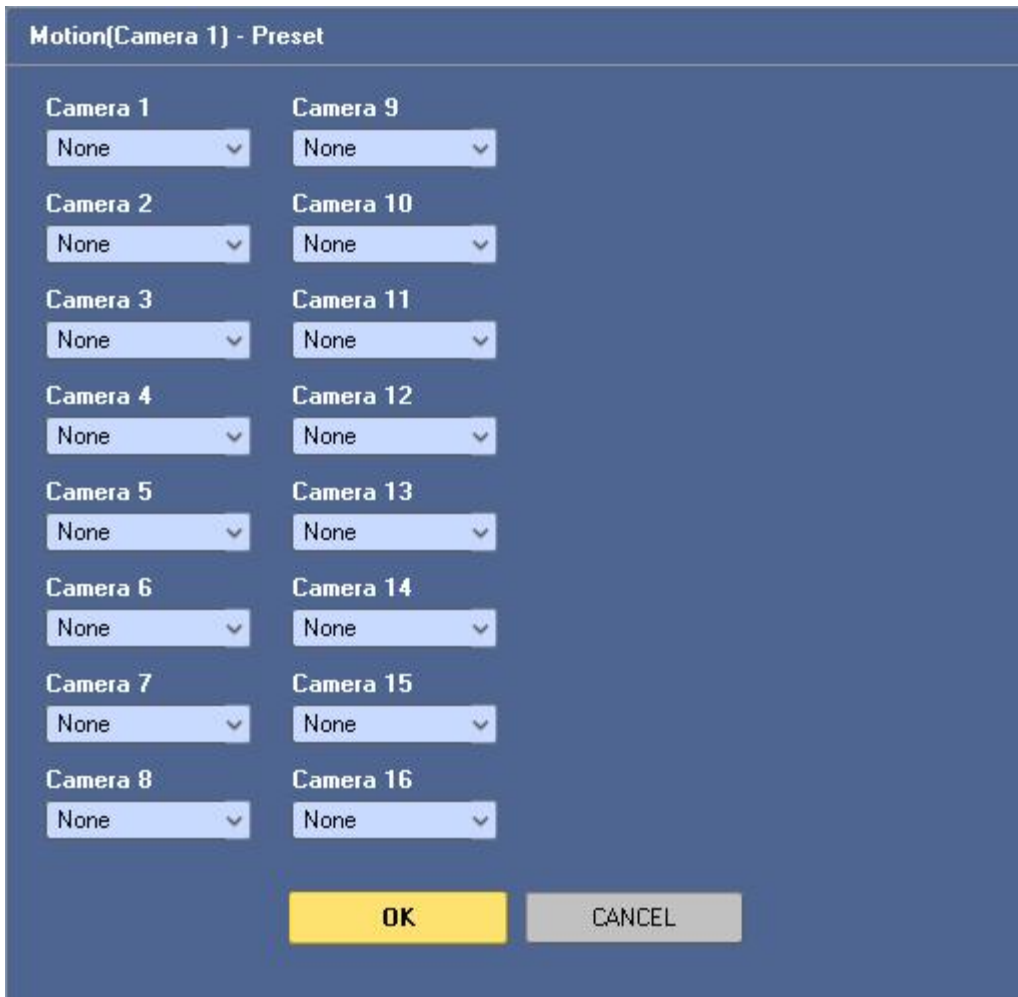
- You can assign the preset position individually by specific motion.

2) Motion Detection

- You can choose the action after motion detection between relay, buzzer sound and pop up.



- Also you can choose more than one action. Furthermore you can set the preset position number by motion detection. If you click the 'setup'  icon you can see the preset screen.



Motion(Camera 1) - Preset

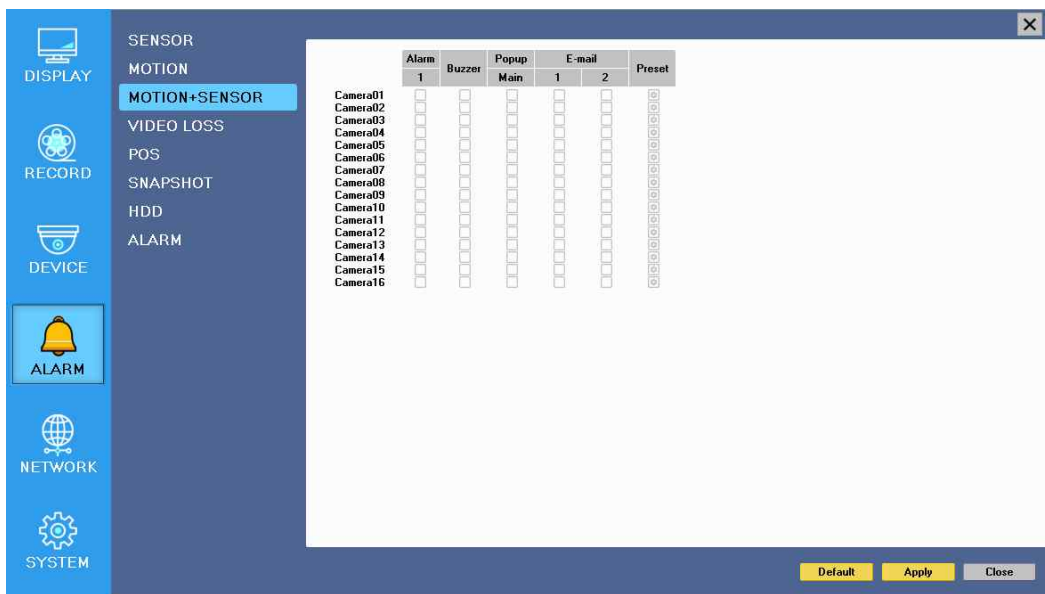
| | |
|----------|-----------|
| Camera 1 | Camera 9 |
| None | None |
| Camera 2 | Camera 10 |
| None | None |
| Camera 3 | Camera 11 |
| None | None |
| Camera 4 | Camera 12 |
| None | None |
| Camera 5 | Camera 13 |
| None | None |
| Camera 6 | Camera 14 |
| None | None |
| Camera 7 | Camera 15 |
| None | None |
| Camera 8 | Camera 16 |
| None | None |


OK CANCEL

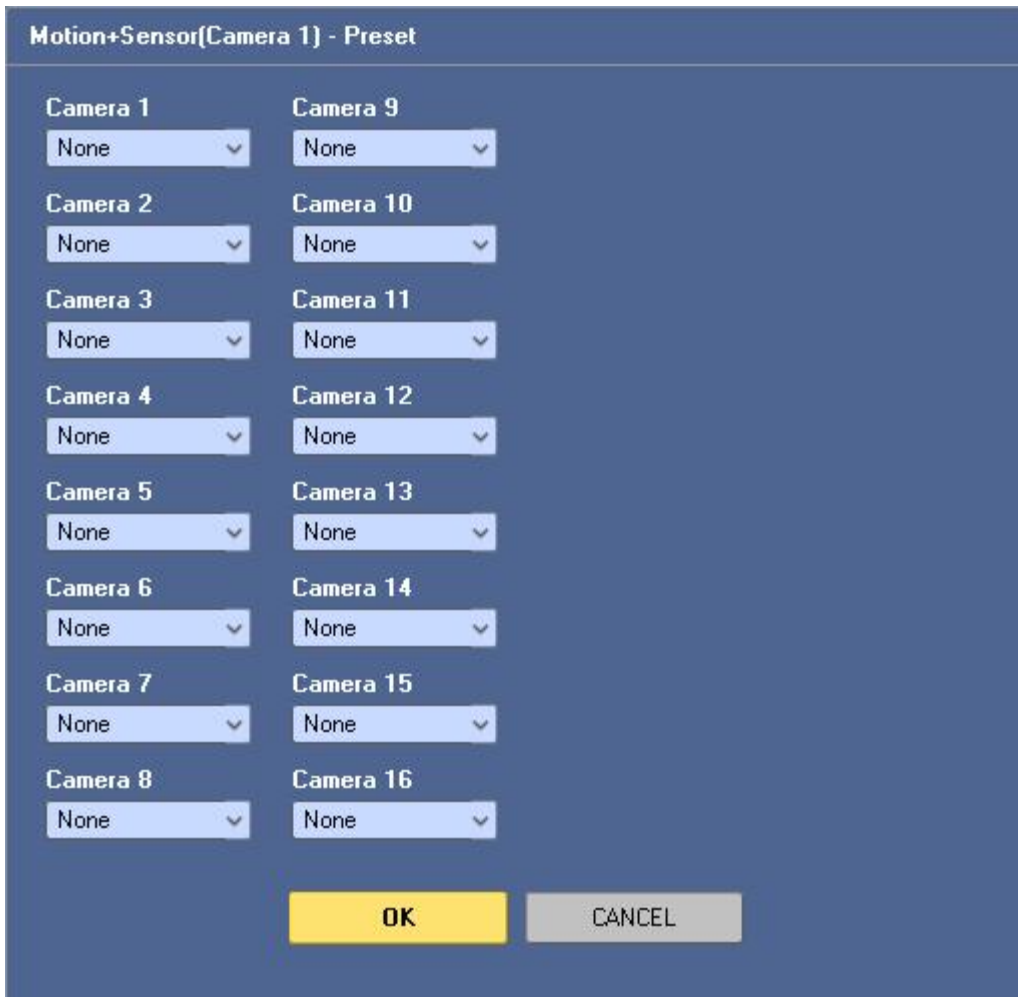
- You can assign the preset position individually by specific motion.

3) Motion Detection + Sensor

- You can choose the action after motion and sensor detection between relay, buzzer sound and pop up.



- Also you can choose more than one action. Furthermore you can set the preset position number by motion detection. If you click the 'setup'  icon you can see the preset screen.



Motion+Sensor[Camera 1] - Preset

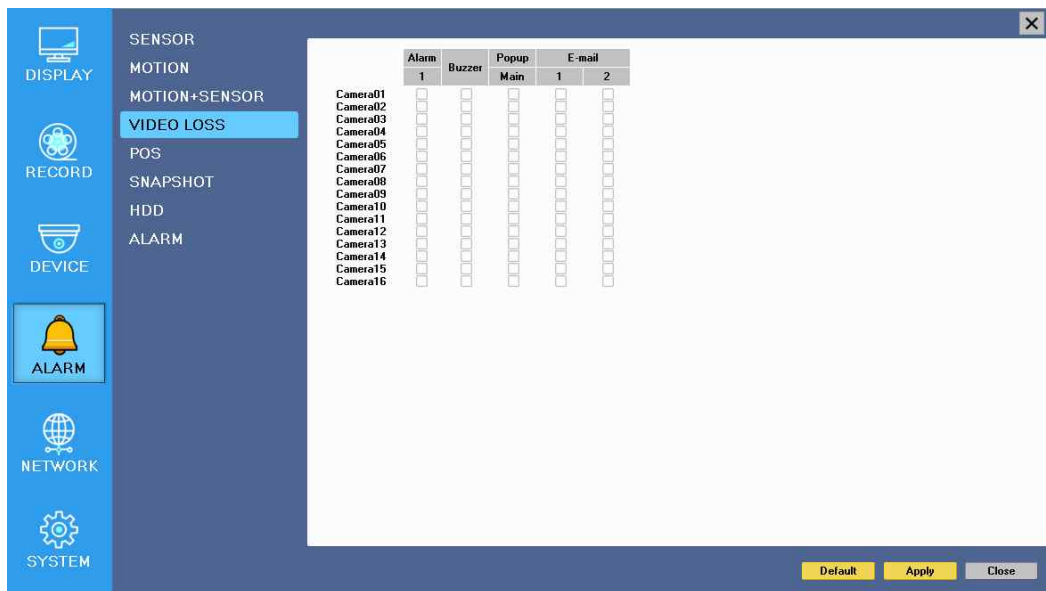
| | |
|----------|-----------|
| Camera 1 | Camera 9 |
| None | None |
| Camera 2 | Camera 10 |
| None | None |
| Camera 3 | Camera 11 |
| None | None |
| Camera 4 | Camera 12 |
| None | None |
| Camera 5 | Camera 13 |
| None | None |
| Camera 6 | Camera 14 |
| None | None |
| Camera 7 | Camera 15 |
| None | None |
| Camera 8 | Camera 16 |
| None | None |

OK CANCEL

- You can assign the preset position individually by specific motion.

4) Video Loss

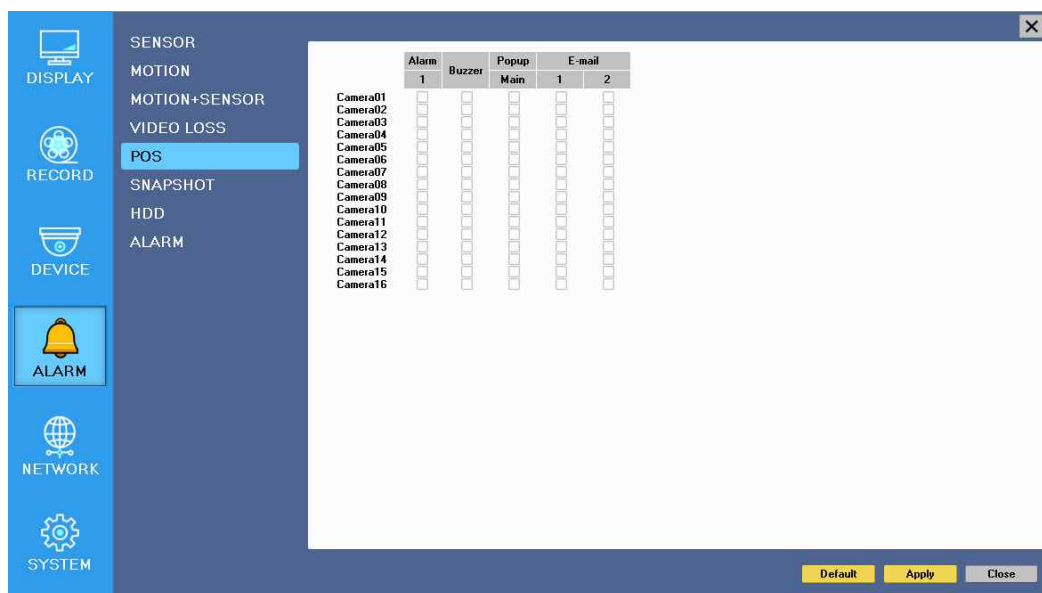
- You can choose the action after video loss between relay, buzzer sound, and pop up.



- Also you can choose more than one action.

5) POS

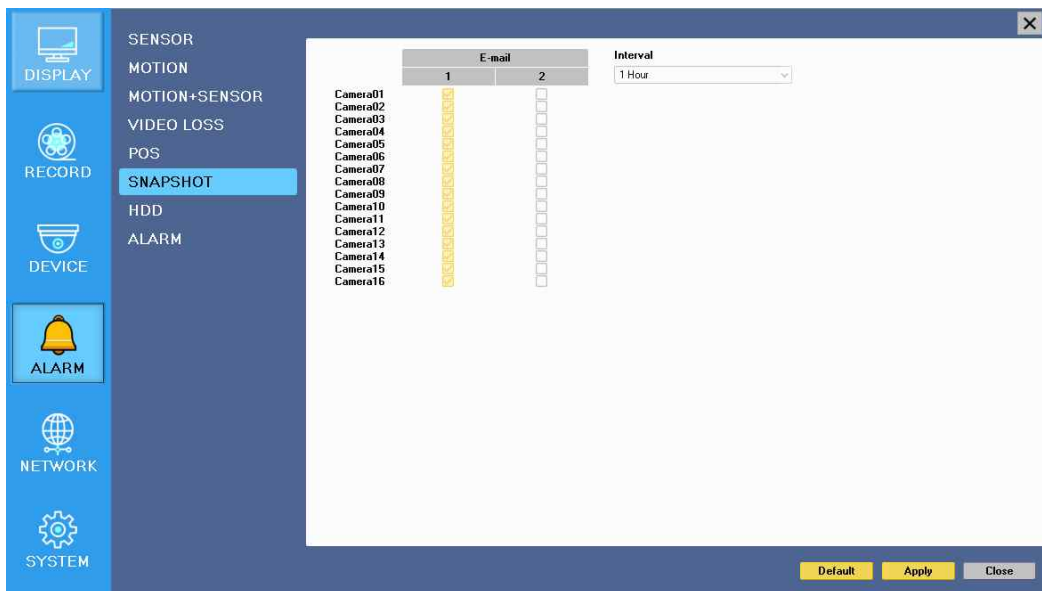
- You can choose the action after POS transaction or video loss between relay, buzzer sound and pop up.



- Also you can choose more than one action.

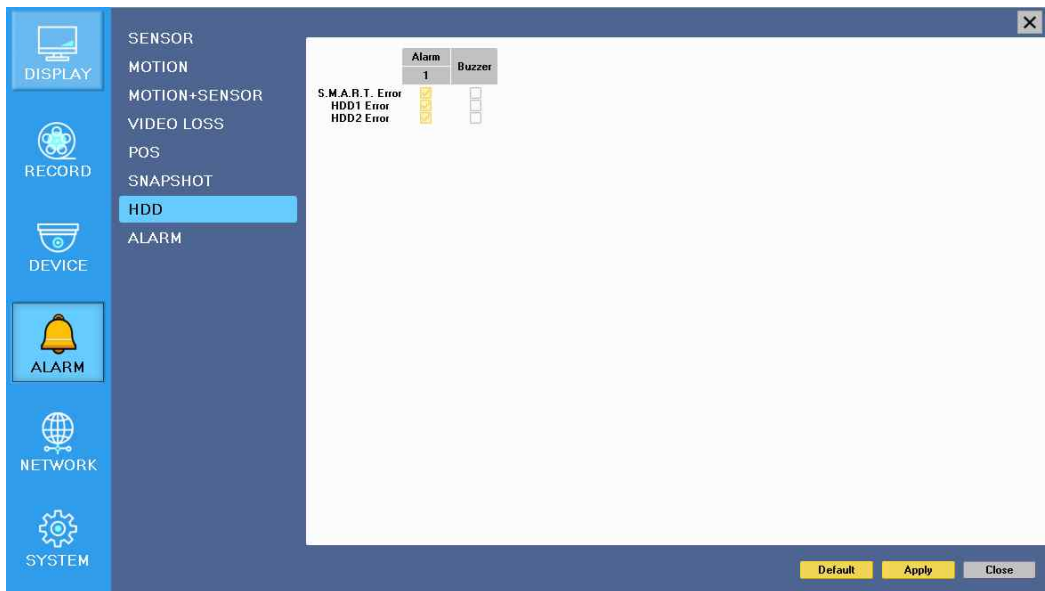
6) Snapshot

- Set up snapshot according to the set email settings



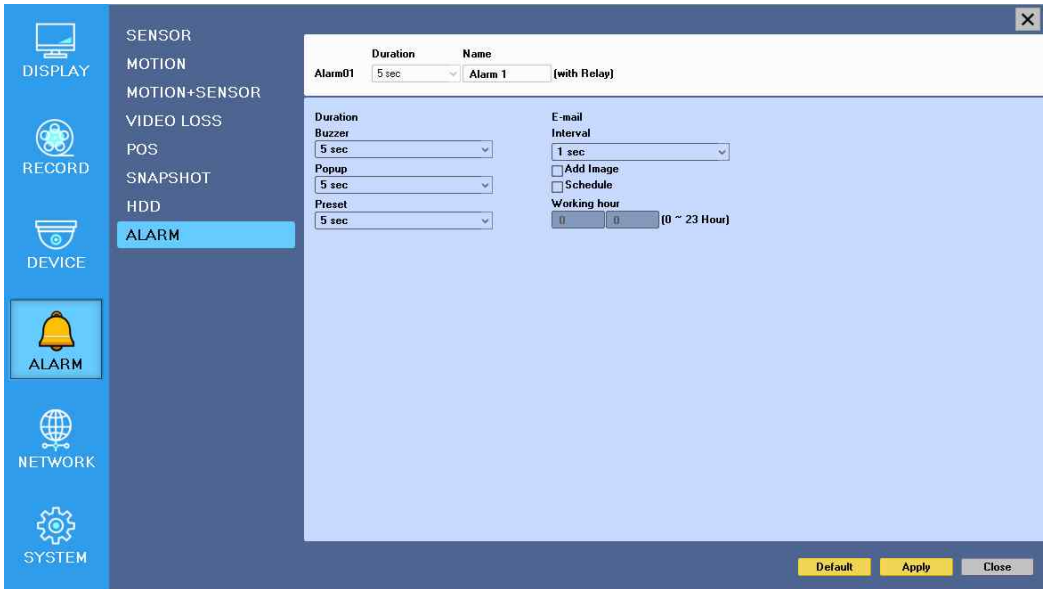
7) HDD

- Set an alarm or buzzer when S.M.A.R.T error occurs in the HDD



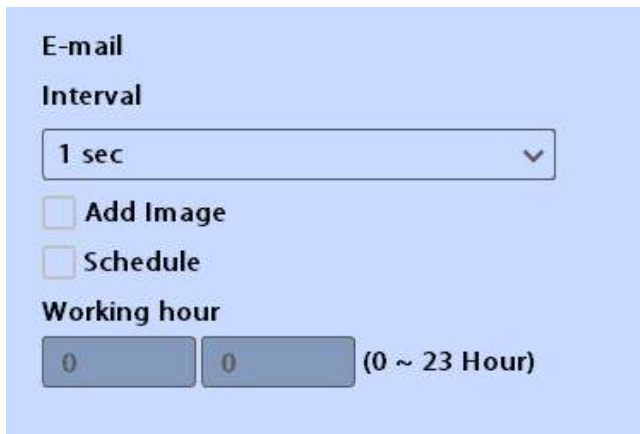
8) Alarm

- You can choose the duration time from 5 to 60 seconds after motion detection between relay, buzzer sound, pop up and preset.
- You can set a name of the alarms.



❖ Email

Set events to send the email.



| | |
|-----------|---|
| Interval | Set an interval for sending emails. |
| Add Image | Send a snapshot of events to the email. |
| Schedule | Set schedule. |

3-4-5. NETWORK

Configure and view Address, Port, DDNS, E-mail, Control and Status settings.

1) Address

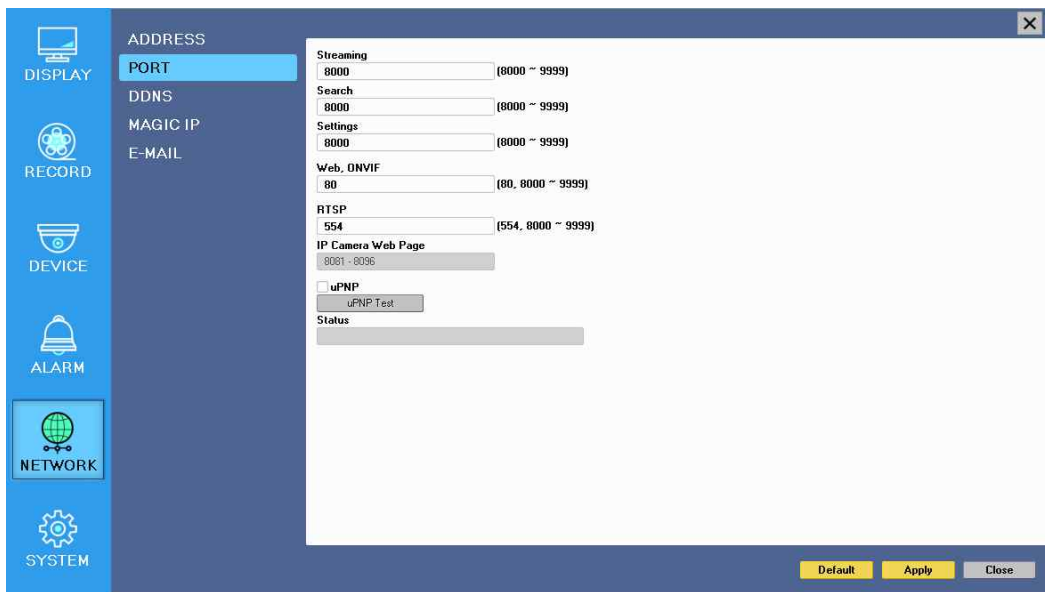
Configure Network information for Remote client connection.

| | |
|---|--|
| NVR Name | Type the URL of NVR using virtual keyboard. |
| Type | It can be supported only Ethernet. |
| DHCP (Dynamic Host Configuration Protocol) | Set whether you want to use DHCP or not (On/Off). If you connect LAN after setting it to On, IP is allocated automatically. If you set it to Off, you have to input IP. DHCP is a protocol that allows managers to manage and allocate IP address centrally. |
| IP | Type the IP address. |
| Subnet Mask | Type the subnet mask. |
| Gateway | Type a gateway. |
| DNS Auto | If you connect LAN after setting it to On, DNS IP is allocated automatically. If you set it to Off, you have to input DNS IP. |
| DNS IP | Type the DNS IP. |

2) Port

There are 4 kinds of ports for the case such as watch, search, setup and web. You can individually set the port number of the NVR. The default is 8000. You can choose from 8000 to 9999.

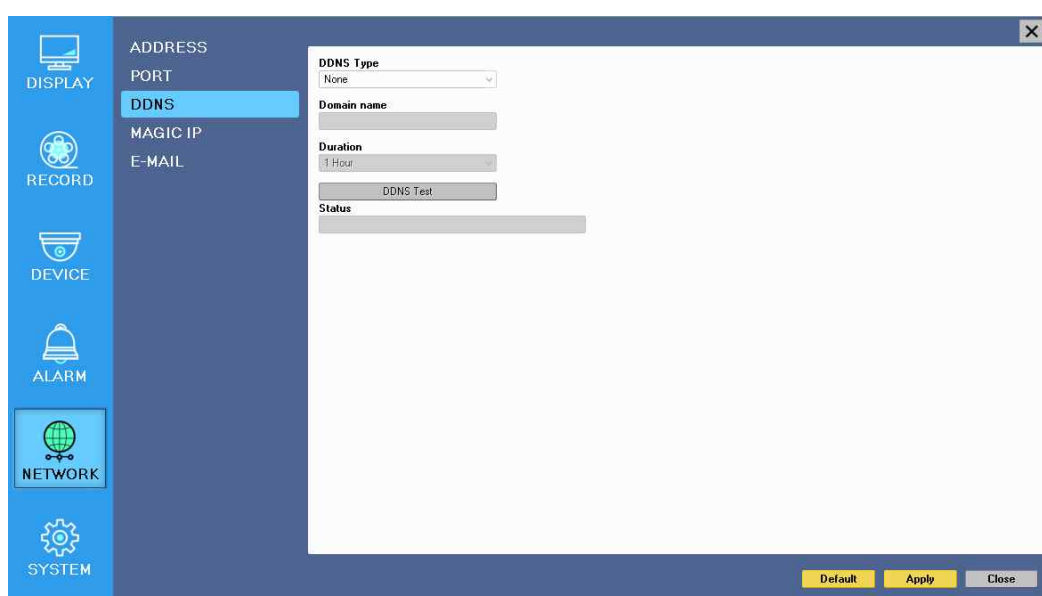
If you activate ‘uPNP (Universal plug and play)’ box, NVR connects the router automatically with these port number. You don’t have to setup the router.



| | |
|--------------|--------------------------------------|
| Watch | Type the port. (1000~40000) |
| Search | Type the port. (1000~40000) |
| Setup | Type the port. (1000~40000) |
| Web(Onvif) | Type the port. (80, 1000~40000) |
| RTSP | Type the port. (554, 1000~40000) |
| IPCamWebPage | The Channels are assigned from 8081. |
| uPNP | ON / OFF |
| uPNP Test | Test uPNP |
| Status | It shows the test result of uPNP. |

3) DDNS

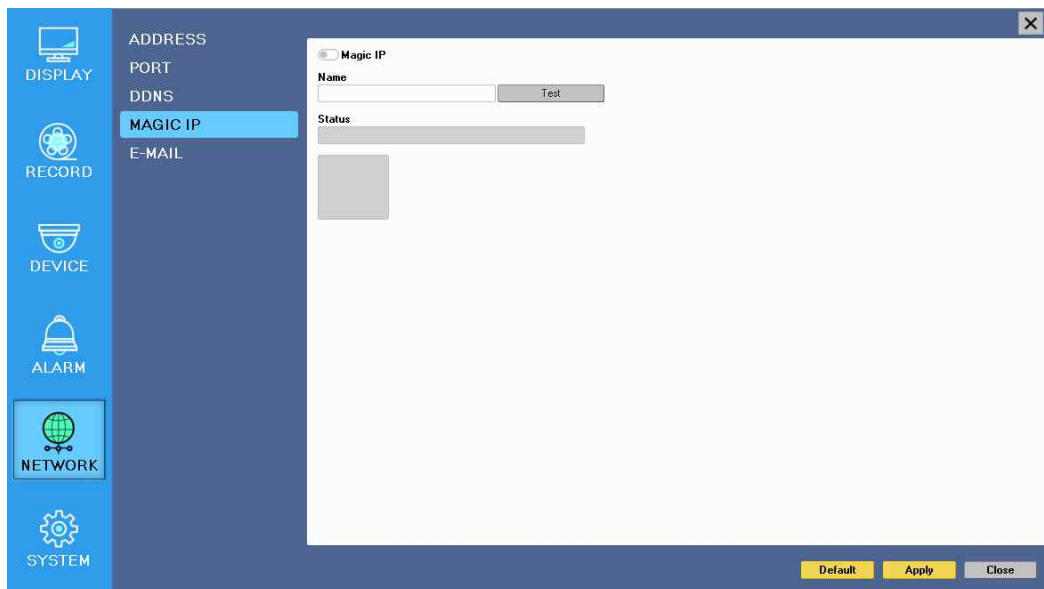
This is the function to automatically change the IP of NVR to URL. This product supports the automatic DDNS service using manufacture's internal server. Also you can choose Dyndns.2



| | |
|---------------|---|
| DDNS Type | Choose a DDNS type. |
| DDNS Server | Defend on the DDNS type, it will be auto-typed or disable. |
| Port | Defend on the DDNS type, it will be auto-typed or disable |
| Domain name | Type the port of the email account. |
| ID | Defend on the DDNS type, it will be auto-typed or type the ID of your DDNS. |
| DDNS Password | type the DDNS password. |
| Duration | choose the time sync frequency with DDNS server. |
| DDNS Test | Test your DDNS. |

4) Magic IP

P2P service, which enables network access simply by using a smartphone to scan the supplied product QR code.



❖ Magic IP setup

1. Check Magic IP.
2. Make your own ID for Magic IP.
3. The ID must start with letter and contain at least 8 characters.
4. When the test is done and succeed, it's QR code is automatically created.

5) E-mail

You can send a notification of events by email. Fill all the information correctly and push the 'Email Test'. Also you can select each event individually by 'Event Set'.

The screenshot shows a web interface for configuring email notifications. On the left is a vertical sidebar with icons and labels: DISPLAY, RECORD, DEVICE, ALARM, NETWORK, and SYSTEM. The 'E-MAIL' option is highlighted in the sidebar. The main content area is titled 'E-mail On' and contains the following fields:

- E-mail On
- Recipient: [text input]
- Sender: [text input]
- SMTP Server: [text input]
- Port: [text input]
- Authentication:
- SSL/TLS:
- Account: [text input]
- Password: [text input]
- E-mail Test: [button]

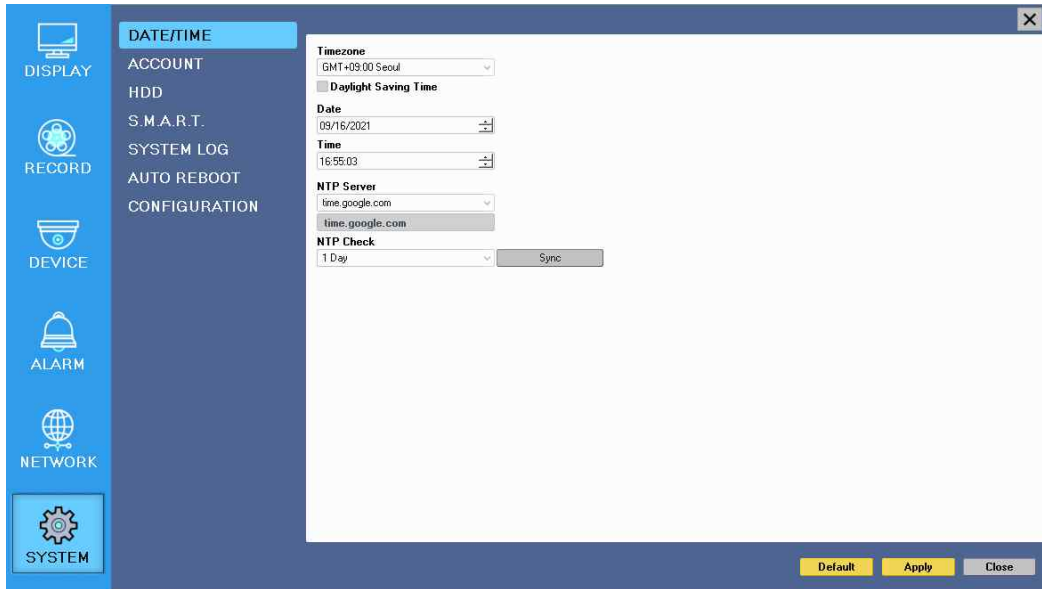
At the bottom right of the configuration area are three buttons: Default, Apply, and Close.

| | |
|----------------|--|
| Recipient | Type an email address of the recipient. |
| Sender | Type a name of the sender. |
| SMTP Server | Type a SMTP server of the email account. |
| Port | Type a port of the email account. |
| Authentication | On/Off |
| SSL/TLS | On/Off |
| Account | Type the email account of the sender. |
| Password | Type the password of the send's email account. |
| E-mail Test | Test the email account. |

3-4-6. SYSTEM

Configure and view system Date/Time, User Authority, Storage, System Log and Configuration settings

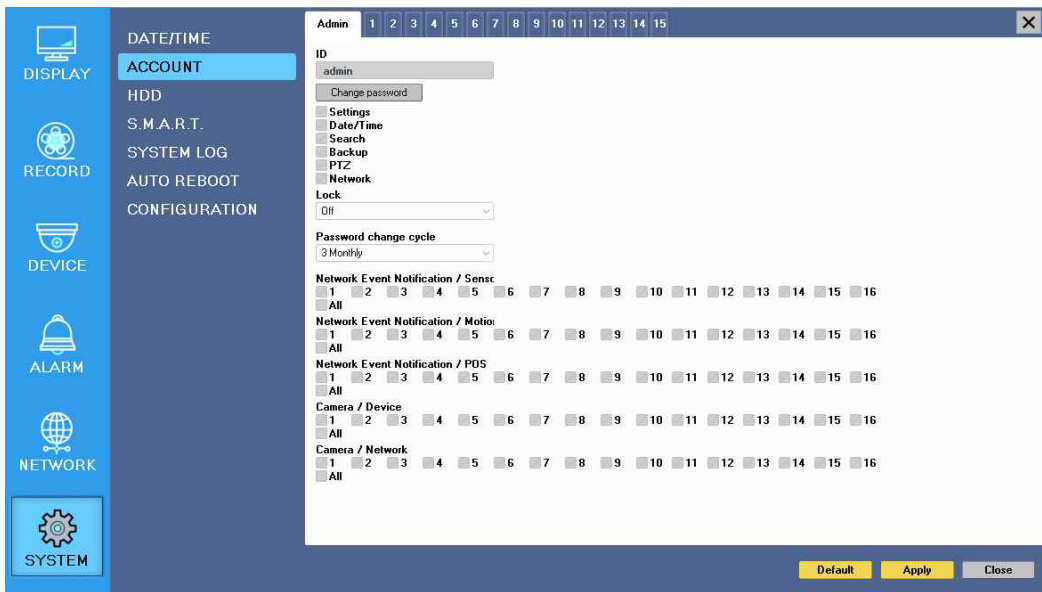
1) Date/Time



| | |
|------------------------------------|---|
| Timezone | Choose the time zone of your site. If you using the NTP function, it must be set correctly to your zone. |
| Daylight Saving Time | It enables to adapt the day light saving time automatically. |
| Date / Time | This sets product time. Input time by pressing number buttons after moving cursor with direction buttons. Be careful to move to backward. The overlapped data will be deleted with warning message. |
| NTP (Network Time Protocol) Server | This function is to change the time of NVR automatically via network. Press the 'Enter' button and using the virtual keyboard, type the address of NTP server. |
| NTP Check | choose the time sync frequency. |
| Sync | Sync the time and NTP. |

2) Account

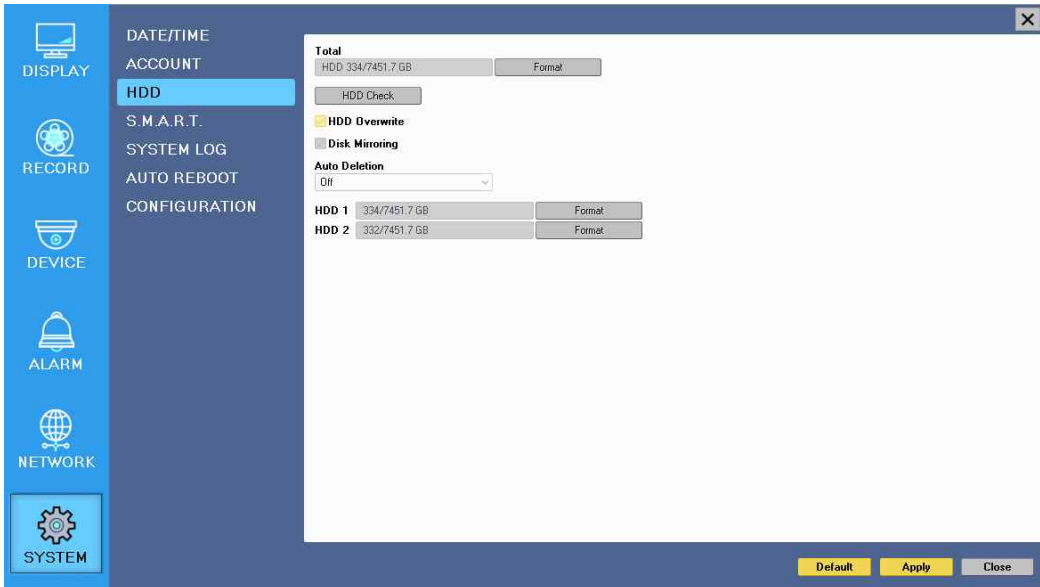
This sets User authority individually. You can give to each users the authorities such as setup, search, backup, PTZ, network and camera control.



| | |
|----------------------------|---|
| ID | Type an ID. |
| Change Password | Type a password. |
| Setup | Authorizes the setting of the system. |
| Search | Authorizing the search of the system. |
| Backup | Authorizing backup of the system. |
| PTZ | Authorizing PTZ of the system. |
| Network | Authorizing network of the system. |
| Network Event Notification | Authorizing a network event notification. |
| Camera | Authorizing a camera. |
| Lock | select the auto-lock time.(Off, 1~10 min) |

3) HDD

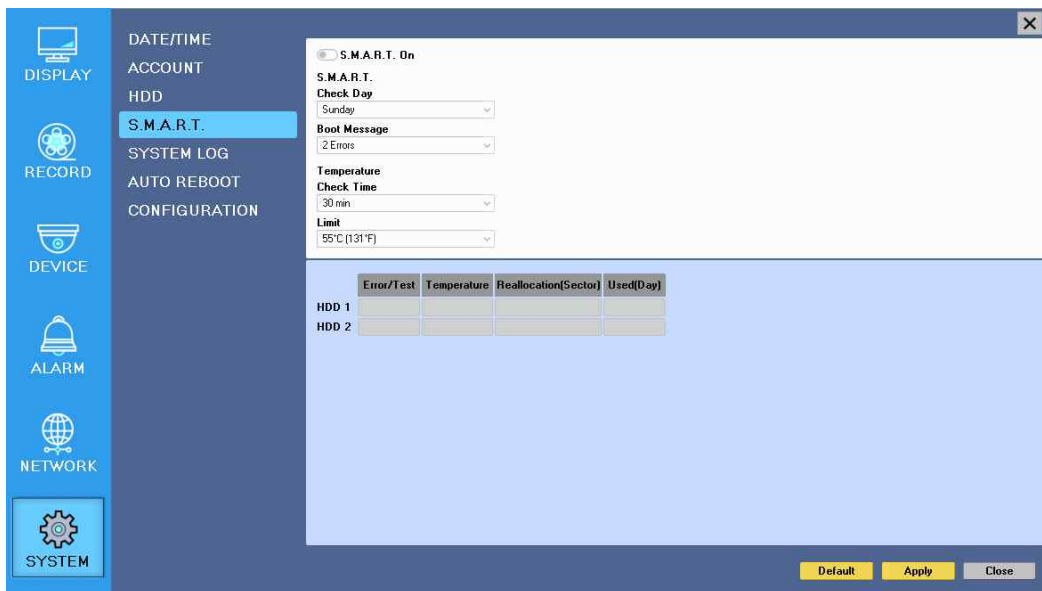
Display the information and usage of the hard disk drives.



| | |
|----------------|---|
| Total | Display the HDD usage being used for the product. If you press the 'Enter' button on here, all the hard disk drives will be formatted. |
| HDD Check | Check the HDD. |
| HDD Overwrite | Determine whether you want to continue recording if there is no spare saving space at hard disk drives. |
| Disk Mirroring | If you install two hard disk drives, you can set the second drive as a backup drive by mirroring. The mirrored disk size will be the same or greater than master HDD. |
| Auto Deletion | You can select the holding period of the data. If you choose 'OFF', the NVR keep the maximum data regarding the HDD capacity. |

4) S.M.A.R.T :Self-Monitoring Analysis and Reporting Technology

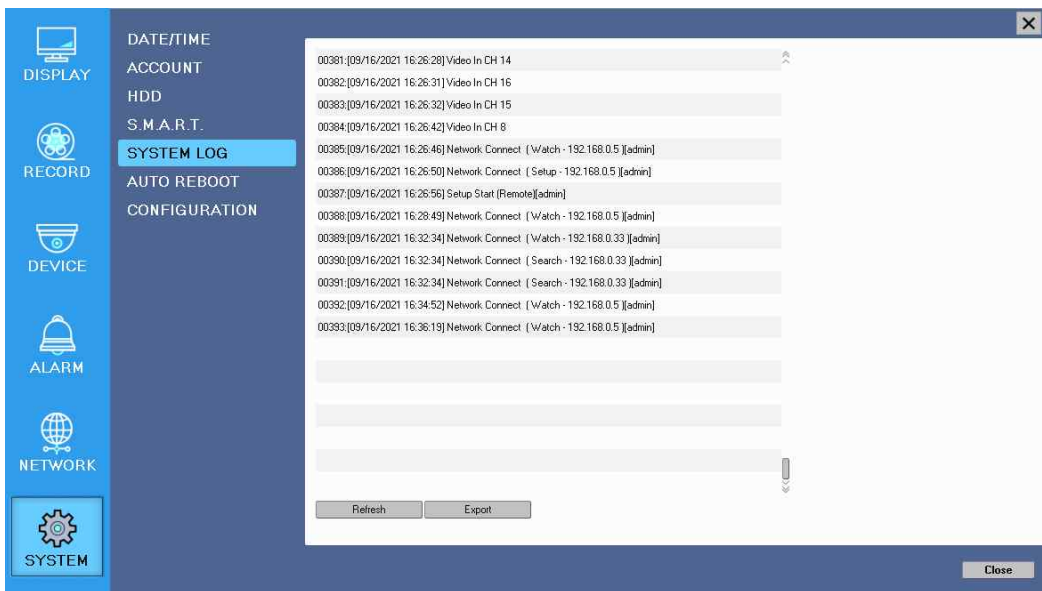
This function lets you probe the hard disk drives and investigate the status of the drivers automatically.



| S.M.A.R.T. | |
|---------------|---|
| S.M.A.R.T. On | Set whether you want to use S.M.A.R.T. or not (On/Off). |
| Check Day | Determine the date to perform the S.M.A.R.T. |
| Boot Message | The number of message of showing the errors. |
| Temperature | |
| Check Time | Temperature check period. |
| Limit | The upper tolerance of the hard disk drive temperature. |
| Alarm out | You can choose Buzzer or Relay |

5) System Log

You may view all System administration log from Setup → System → System Log. Also you can export the system log and easily send it to technical support for trouble shooting.



| | |
|---------|-------------------------|
| Refresh | Refresh the system log. |
| Export | Export the system log. |

6) Auto Reboot

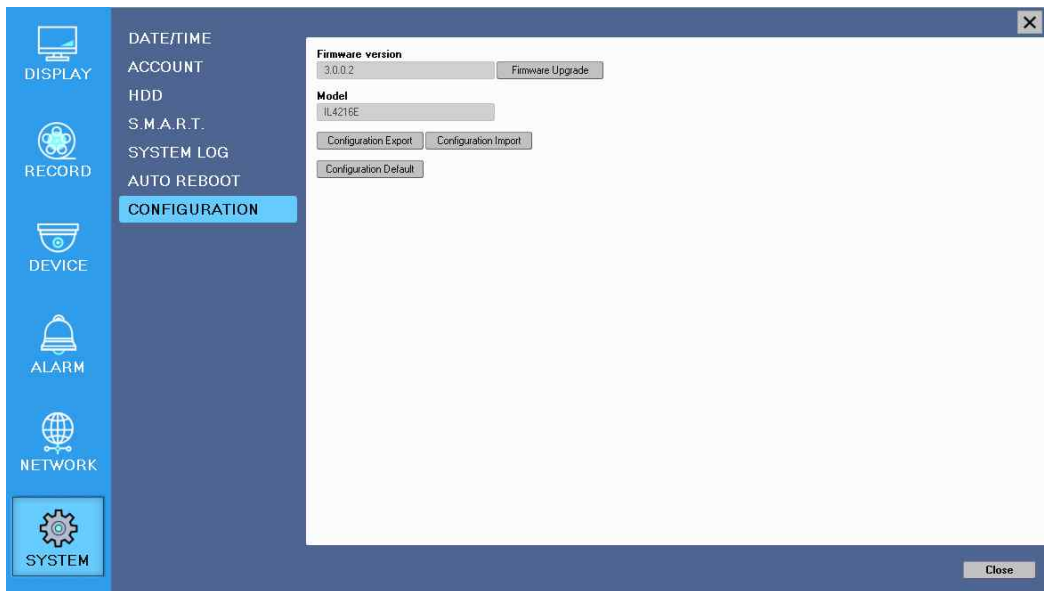
Set schedule for auto reboot.



| | |
|-------------|------------------------|
| Auto Reboot | On / Off |
| Period | Set auto reboot period |
| Day Of Week | Set the day |
| Time | Set the time |

7) Configuration

Shown at the following screen, from Setup → System → Firmware, you may view the current firmware version as well as Upgrade the firmware and additionally, Export, Import, and Default NVR Configuration.



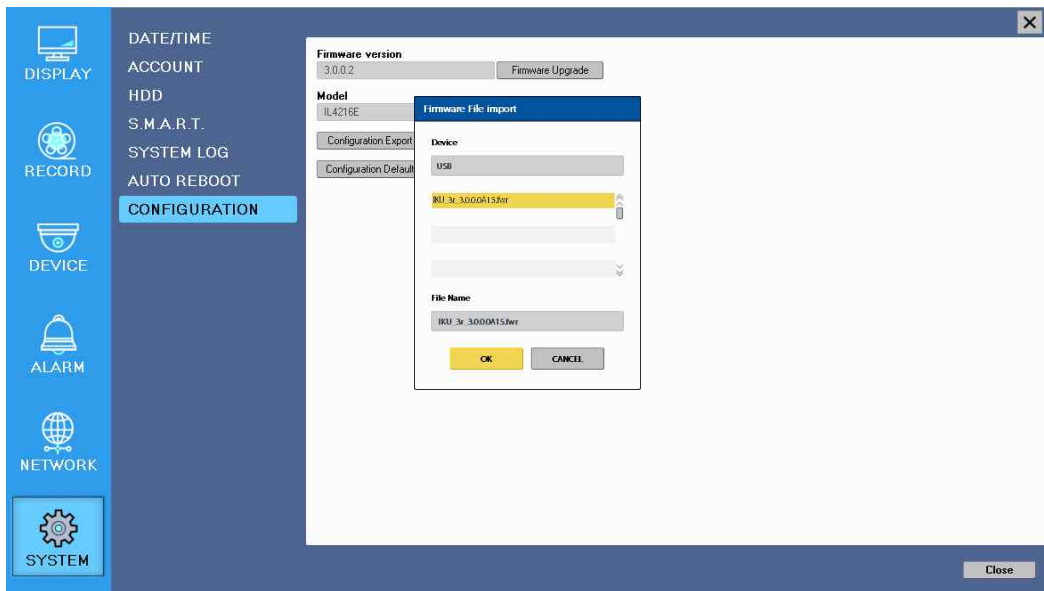
| | |
|-----------------------|--|
| Firmware version | Show the firmware version of the device. |
| Firmware Upgrade | Upgrade the device by a firmware. |
| Configuration Export | Export system settings. |
| Configuration Import | Import system settings. |
| Configuration Default | Return to factory default settings. |

You should connect correctly the USB devices, before you use firmware upgrade, export and import.

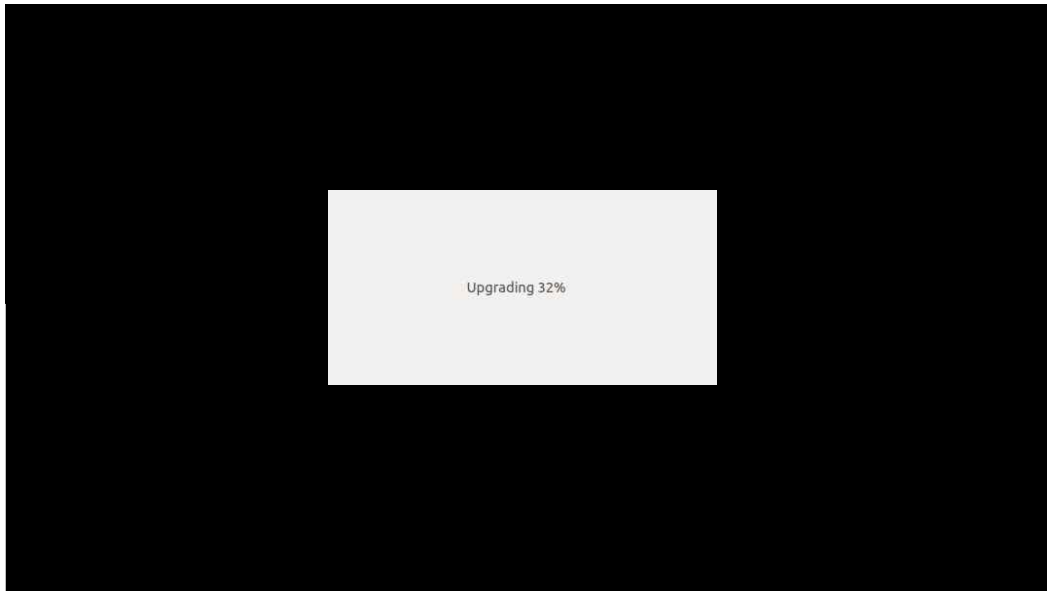
3-5. Firmware Upgrade

If you want to upgrade, please follow that;

1. Download the latest firmware to USB memory root directory.
2. Put this memory to USB slot of NVR.
3. Choose 'Upgrade' and you can see the below screen will appear.
4. Select the desired file, then choose 'OK'.



If you choose OK, you can see the below download window on the NVR screen.



 **WARNING!!!**

Do not turn off the power during download procedure. If you power off manually, all memory will be deleted !

※ After upgrading, NVR will reboot automatically. Before rebooting, do not operate manually !

Trouble Shooting

| Symptom | Checkpoint | Countermeasure |
|---|--|--|
| <ul style="list-style-type: none"> ● Can't turn on power. | <ul style="list-style-type: none"> ● Is NVR connected to power supply cable? | <ul style="list-style-type: none"> ● Connect power cable |
| <ul style="list-style-type: none"> ● There is no image on monitor | <ul style="list-style-type: none"> ● Are NVR and monitor turned on? ● Are cables of NVR connected? | <ul style="list-style-type: none"> ● Turn on power. ● Connect NVR cable. |
| <ul style="list-style-type: none"> ● Only INFO OSD is on monitor and no image | <ul style="list-style-type: none"> ● Is camera turned on? ● Are cables of NVR and monitor connected? | <ul style="list-style-type: none"> ● Turn on camera. ● Connect cables of NVR and monitor. |
| <ul style="list-style-type: none"> ● There is Video Loss message. | <ul style="list-style-type: none"> ● Is connection between NVR and camera normal? | <ul style="list-style-type: none"> ● Check whether NVR and camera are connected properly |
| <ul style="list-style-type: none"> ● Can't search with Client Program. | <ul style="list-style-type: none"> ● Isn't another user using same IP? | <ul style="list-style-type: none"> ● Use it after another user finishes using it. If another user is searching NVR remotely with same IP, you can not search. |
| <ul style="list-style-type: none"> ● Motion Detection doesn't work well | <ul style="list-style-type: none"> ● Isn't it too bright or too dark? | <ul style="list-style-type: none"> ● Increase Motion Detection sensitivity. ● Install camera closer. |
| <ul style="list-style-type: none"> ● There are differences between Live screen and actual condition during remote monitoring | <ul style="list-style-type: none"> ● Isn't camera installed too far away? | <ul style="list-style-type: none"> ● Since it buffers Live images, there might be changes with actual condition. (1~2 sec) |
| <ul style="list-style-type: none"> ● Live doesn't work well in remote monitoring | <ul style="list-style-type: none"> ● Is it set to True Color? ● Are PC specifications and VGA Card specifications are appropriate? | <ul style="list-style-type: none"> ● Upgrade the VGA card to the latest driver. |